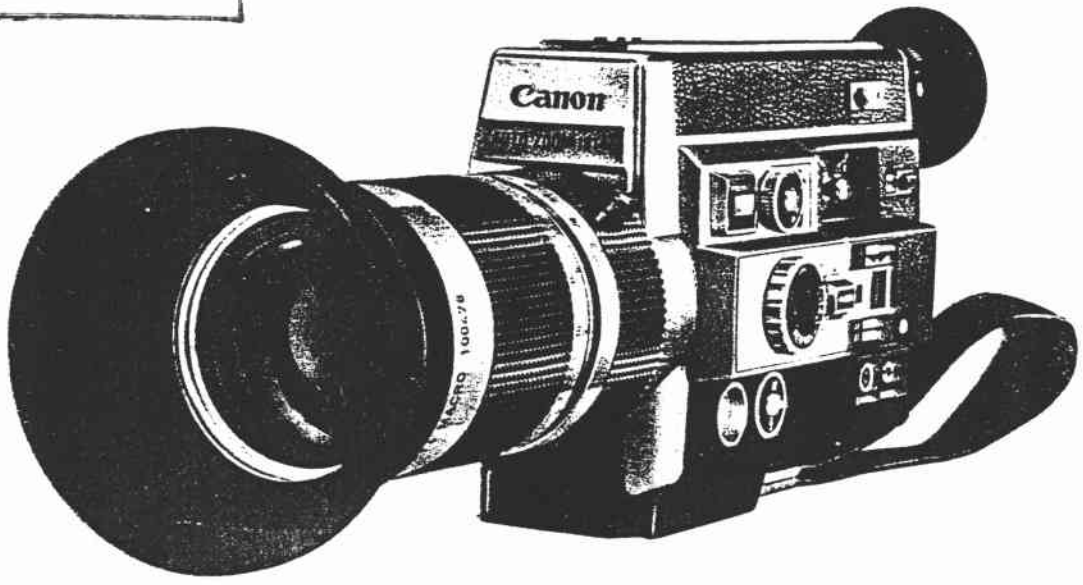
C3/18-343

E

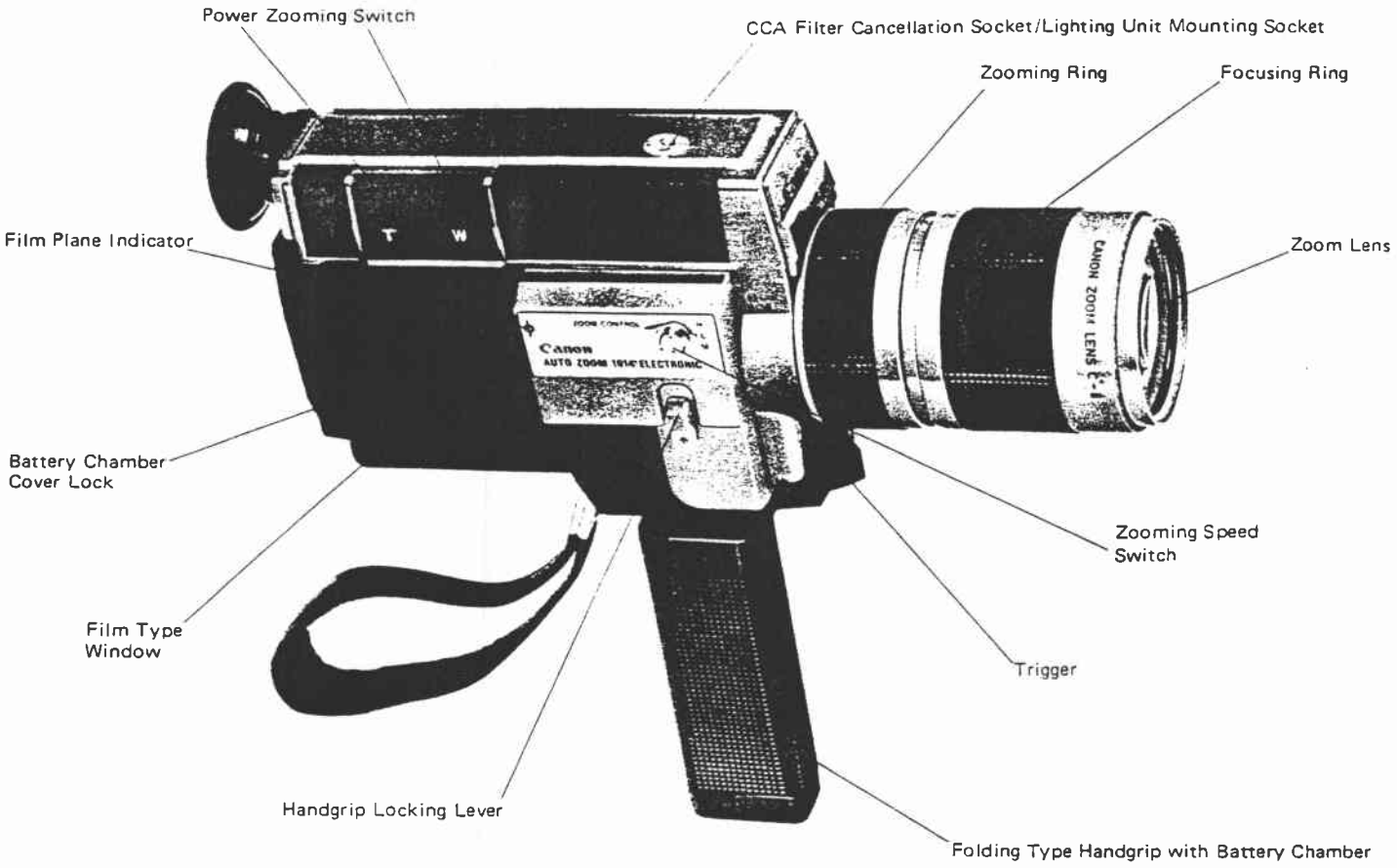
# Canon

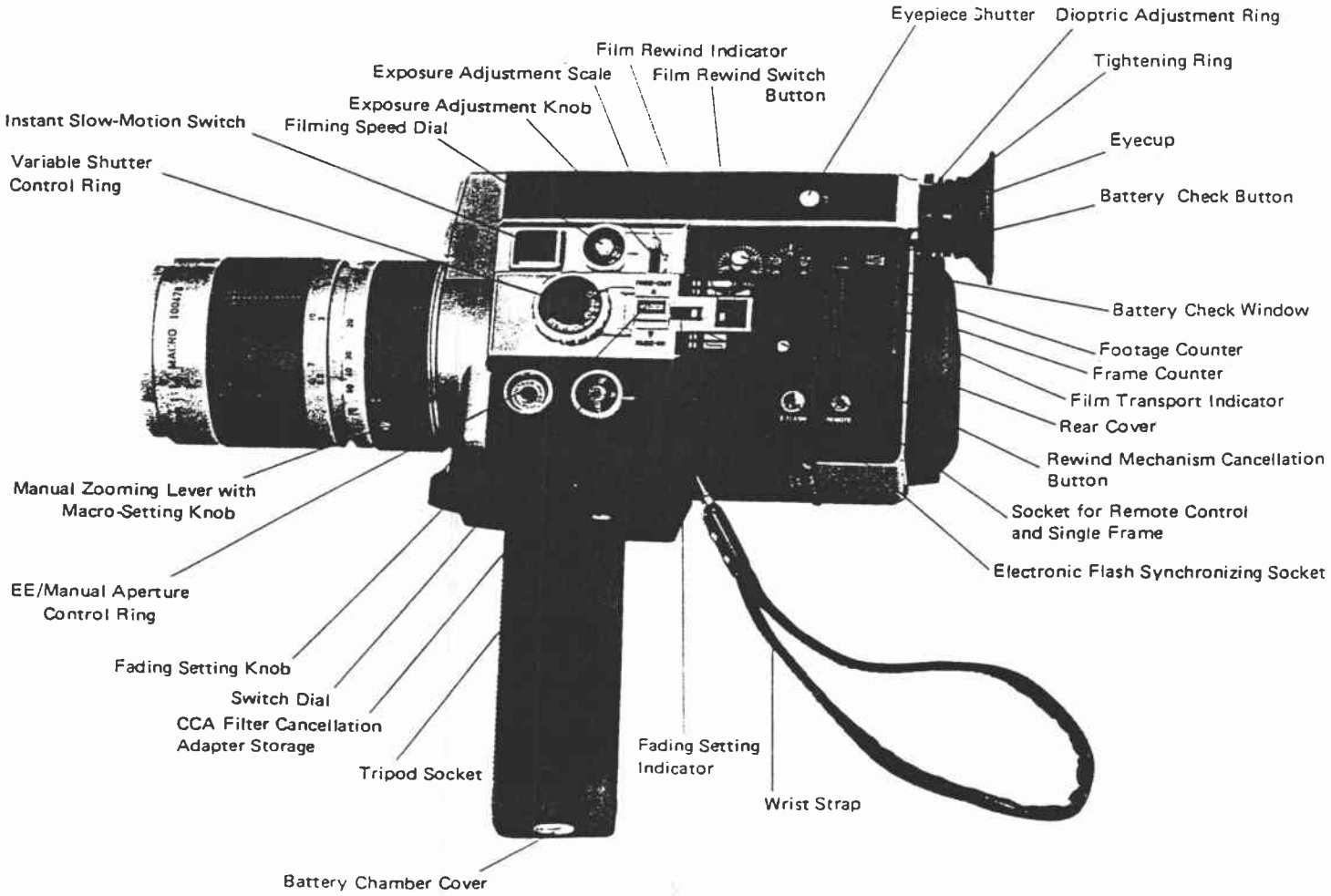
# AUTO ZOOM ELECTRONIC 1014

BEST AVAILABLE COPY




INSTRUCTIONS


Power Zooming Switch
CCA Filter Cancellation Socket/Lighting Unit Mounting Socket
Zooming Ring
Focusing Ring
Film Plane Indicator
Zoom Lens
Battery Chamber Cover Lock
Zooming Speed Switch
Film Type Window
Trigger
Handgrip Locking Lever
Folding Type Handgrip with Battery Chamber
T
W
Canon
CANON ZOOM LENS


Eyepiece Shutter
Dioptric Adjustment Ring
Film Rewind Indicator
Tightening Ring
Exposure Adjustment Scale
Film Rewind Switch Button
Exposure Adjustment Knob
Instant Slow-Motion Switch
Filming Speed Dial
Eyecup
Variable Shutter Control Ring
Battery Check Button
Battery Check Window
Footage Counter
Frame Counter
Film Transport Indicator
Rear Cover
Rewind Mechanism Cancellation Button
Manual Zooming Lever with Macro-Setting Knob
Socket for Remote Control and Single Frame
Electronic Flash Synchronizing Socket
EE/Manual Aperture Control Ring
Fading Setting Knob
Switch Dial
CCA Filter Cancellation Adapter Storage
Tripod Socket
Fading Setting Indicator
Wrist Strap
Battery Chamber Cover

# Main Features of Canon Auto Zoom 1014 Electronic

The New 8mm Canon Auto Zoom 1014 Electronic is a Super 8 movie camera of extraordinary high quality. It was conceived on the basis of the experience gained with the Canon Auto Zoom 814 Electronic.

The full range of Canon's technological resources was employed to develop its lens whose zoom ratio is 10 times and its speed is f/1.4, the fastest in this class. The resolving power and ability to reproduce color are also without parallel.

With its built-in rewinding and variable shutter control mechanisms, lap dissolves are possible. Built-in mechanisms such as variable shutter control, macro-shooting system, built-in flash circuit that synchronizes to single-frame shooting, and accessories such as Interval Timer E, Self-Timer E and many others are constantly expanding the range of its movie making possibilities.

## 1 10-Time Compact Zoom Lens with Excellent Resolving Power

Although 10 times is considered a high magnification in a zoom lens, its filter diameter is only 58mm and is very compact. In trying to achieve better resolving power, half of the lens components are newly developed glasses, and Super Spectra Coating was applied to eliminate ghost and flare completely.

## 2 TTL Servo EE of High Precision Metering

TTL metering which measures the incoming light through the lens is employed and CdS photocells are placed behind the diaphragm and close to the focal plane for more precision. An EE system with the Servo meter curately controls the aperture, and since this system is more powerful an former ones, the minimum diaphragm aperture of f/32 became possible. An all-transistor bridge circuit which remains stable during temperature and voltage changes is adopted to make pictures always steady, even at the high speed of 54 fps.

## 3 New Mechanism for Lap Dissolve and Superimposition

Advanced techniques, such as fade-in/out, lap dissolve and superimposition can be done accurately and easily.

This extraordinary camera will give you greater joys in movie making.

## 4 Bright and Accurate Viewfinder Information

The aperture of the eyepiece was enlarged to increase the brightness of the viewfinder and for easier reading. It has the split-image screen which is easy to focus even in dark places, and the rangefinder is interchangeable with the microprism screen.

Meter information, such as over and under-exposure warning marks, aperture scale, meter needle, film end warning lamp, film transport indicator lamp and shutter angle indicator can be easily read at a glance.

## 5 High Speed 54-fps Instant Slow-Motion Shooting

Ordinary shooting speed is changed to sudden slow-motion shooting by pulling down the switch and, compared to other cameras, it shoots with more definition in slow motion.

## 6 Macro-Shooting System Simplifies Close-Ups

Up to now, macro-shooting had been a field in which many accessories and advanced techniques were required, but with the Canon Auto Zoom 1014 Electronic, it is done by simply switching the zooming ring, so that you can easily make interesting close-ups in your movies.

## 7 Synchronized Flash Shooting

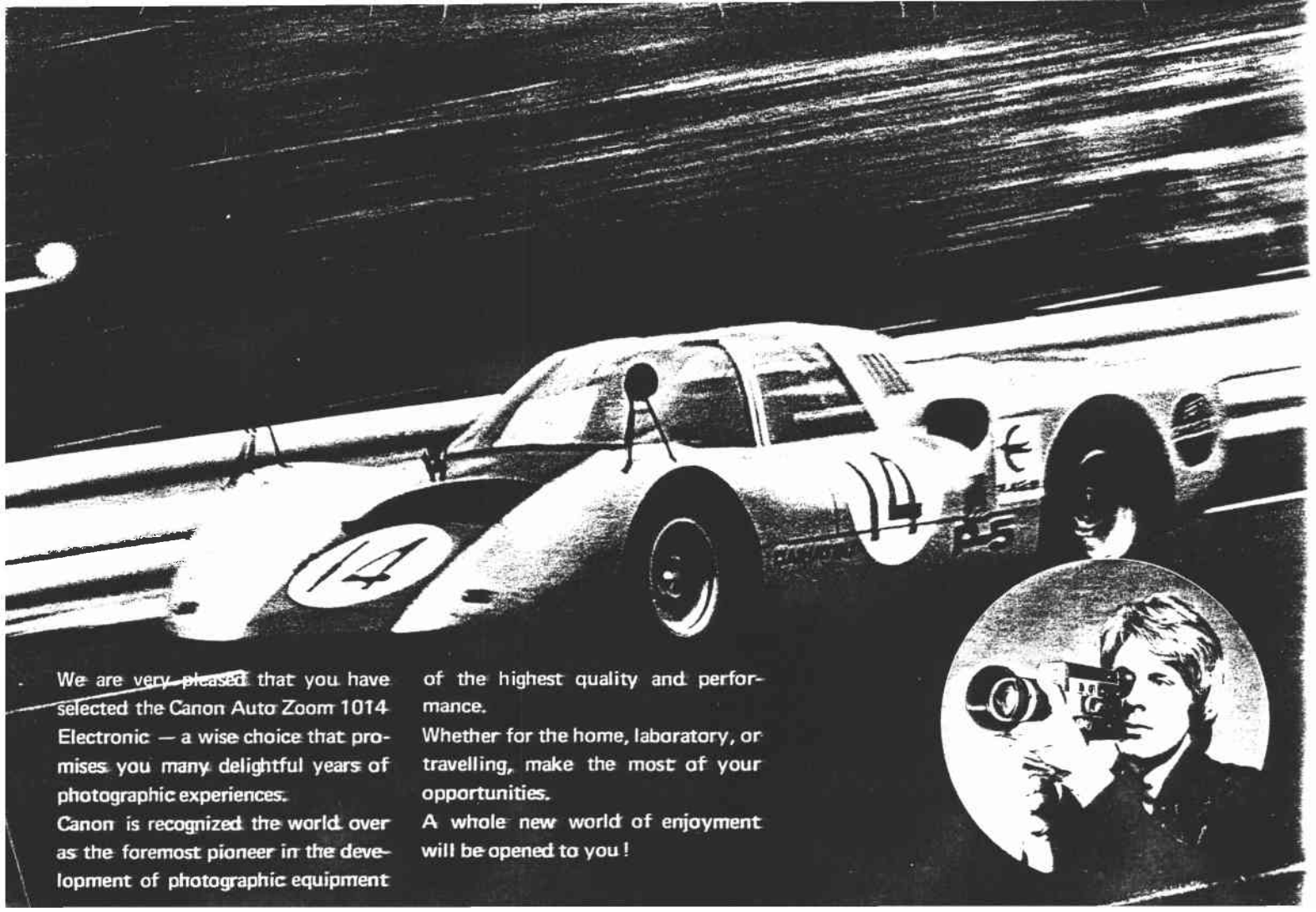
The flash synchronization socket is built-in for single-frame shooting, and is used for titling or for animation films.

## 8 Remote Control Accessories Expand the Range of Shooting

The magnetic release mechanism of this camera enables you to use remote control accessories.

With the Self-Timer E, the photographer himself can enter the picture. The Interval Timer E, and the Time Lapse Programmer are used for shooting at fixed time intervals. All these greatly expand the range of movie making possibilities.

• Practice and master the operation completely according to this instruction book before loading the film cartridge.

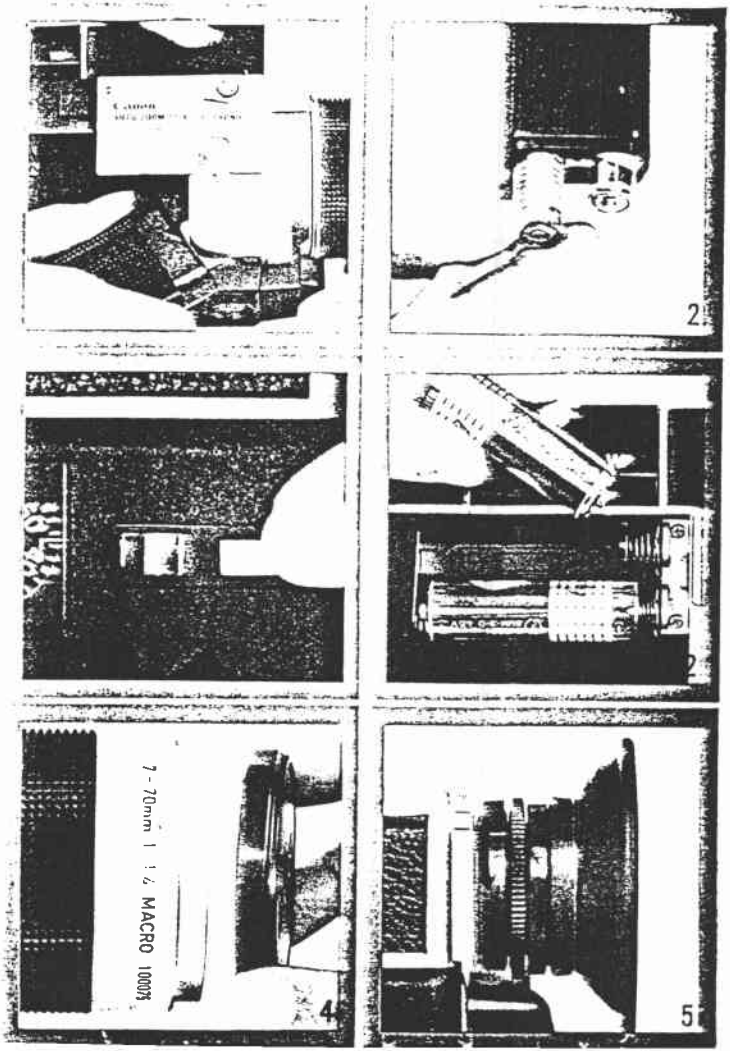



We are very pleased that you have selected the Canon Auto Zoom 1014 Electronic — a wise choice that promises you many delightful years of photographic experiences.

Canon is recognized the world over as the foremost pioneer in the development of photographic equipment of the highest quality and performance.

Whether for the home, laboratory, or travelling, make the most of your opportunities.

A whole new world of enjoyment will be opened to you !




# Setting-Up

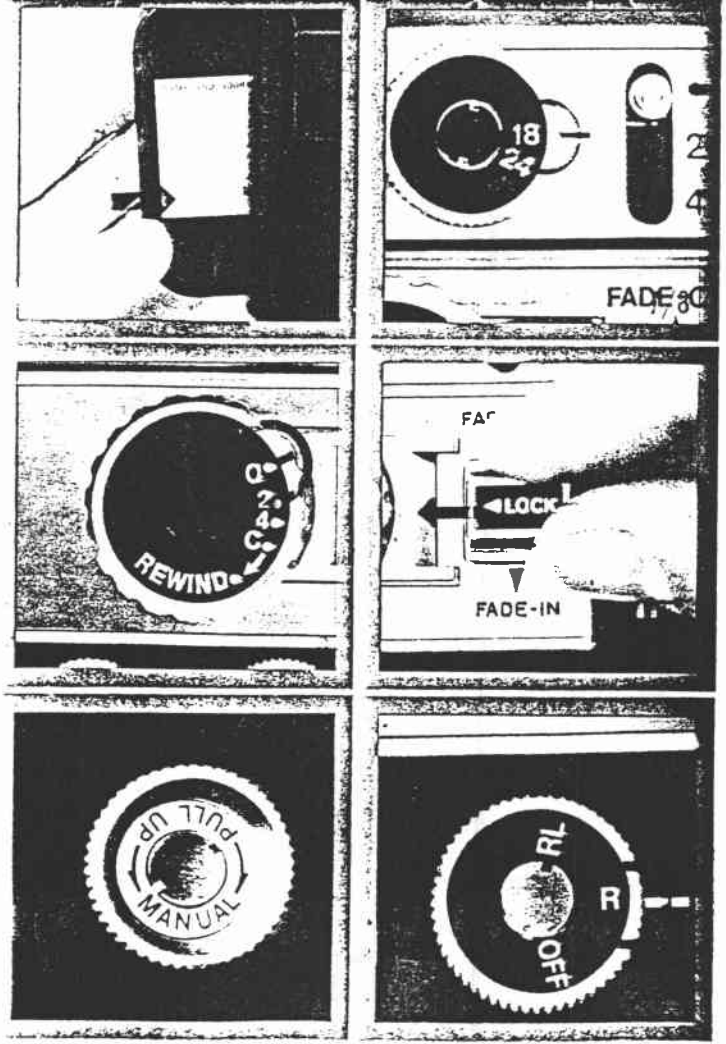
1 Unfold the handgrip.

2 Load the batteries (six 1.5 V penlight size AA).

3 Check the batteries.

4 Remove the lens cap.

5 Adjust the eyepiece to your individual eyesight using the lines of split image viewfinder.




6 Insert the film cartridge.

7 Set the filming speed at "18".

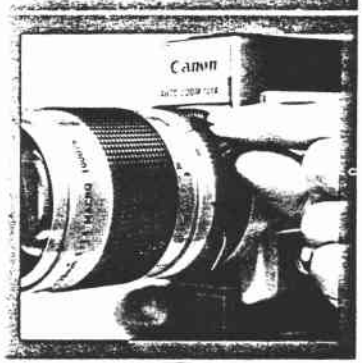
8 Set the exposure adjustment knob at "•".

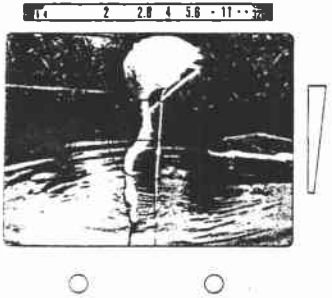
9 Set the variable shutter control ring at "O".

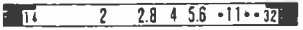
10 Make sure that the fading setting button is pointing to the ◁ mark and check that the setting indicator turns orange.

11 Make sure that the EE/manual aperture control ring is pushed in.

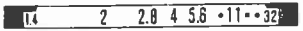
12 Turn the switch to "R".






Under-exposure
(Increase the lighting)




Over-exposure
(Use ND filter)

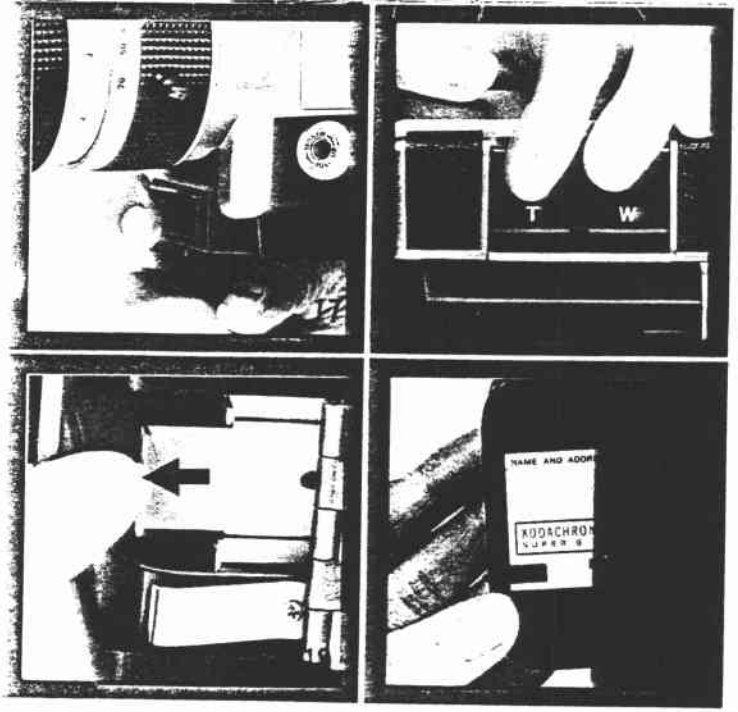
# Operation

**13** Hold the camera and look through the viewfinder.

**14** Focus the subject at the maximum magnification (70mm).

**15** Decide the composition and the size of the picture by turning the zooming ring.

**16** Pull the trigger slightly to confirm the exposure needle is in the range of proper exposure.



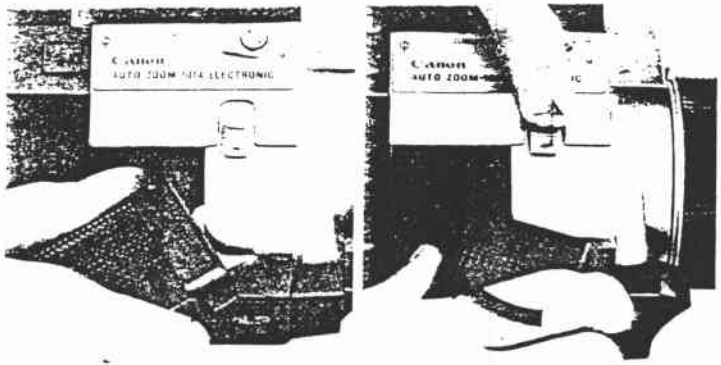

**17** Pull the trigger completely to start filming.

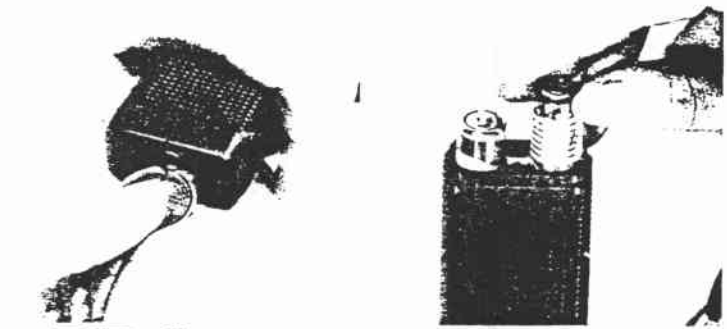
**18** During shooting, zoom in and zoom out according to your needs.

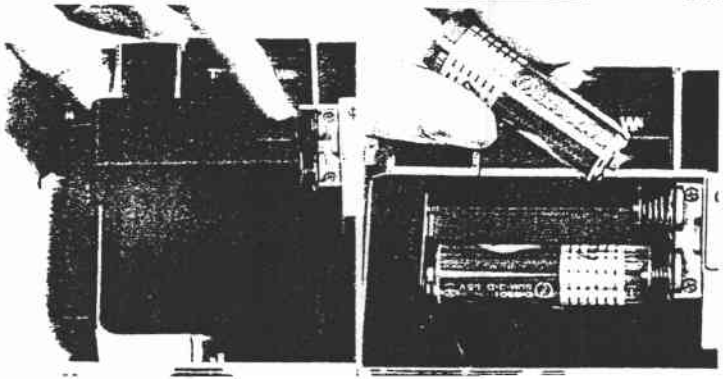
**19** Pull the cartridge out when you finish shooting.


| | Page |
|---|---|
| Setting-Up | 10 |
| Preparations for Electric Eye Operation | 12 |
| EE Shooting | 15 |
| Manual Aperture Control Shooting | 19 |
| Variable Shutter Control | 20 |
| Shooting Techniques | 22 |
| Variable Use of the Shutter | 29 |
| Cancelling the CCA Filter and Taking Pictures in Artificial Light | 31 |

| | Page |
|---|---|
| Macro-Shooting | 32 |
| Combined Use of Macro-Shooting and Zooming Effect | 33 |
| Electronic Flash Pictures | 34 |
| Time Control and Interval Shooting | 35 |
| Shooting Techniques to Heighten Effects | 36 |
| Note | 38 |
| Accessories | 39 |
| Technical Data | 41 |







# Setting-Up

## 1 How to Use the Handgrip

The handgrip also serves as a battery chamber. It is automatically locked firmly when turned out. To fold it, push the handgrip lock up and return it to the former position.

If you should have any difficulty in folding the handgrip, push it forward once while pushing the handgrip lock up, and then fold it to the former position.

## 2 Loading the Batteries

Prepare six penlight (size AA) batteries which are the source of energy for the film drive system, the power zooming system, and the exposure meter. Insert four batteries in the handgrip and two in the battery chamber at the side of the camera body.

• Remove the battery chamber cover at the bottom of the handgrip by turning it counterclockwise with a coin.

Insert the batteries confirming the position of the poles as indicated in the diagram and close the cover.

• Remove the cover of the battery chamber at the side of the camera.

Pull toward the arrow while pushing the cover of the battery chamber.

Insert the batteries as the diagram in the chamber indicates.

Press the cover of the battery chamber toward the arrow until it clicks.

+ Running Ability:

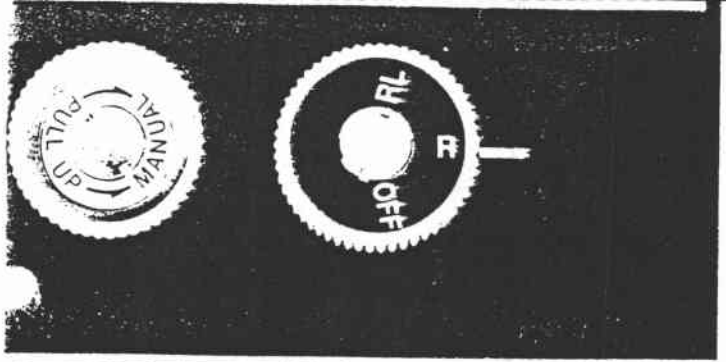
Manganese batteries Approx. 10 cartridges or more.

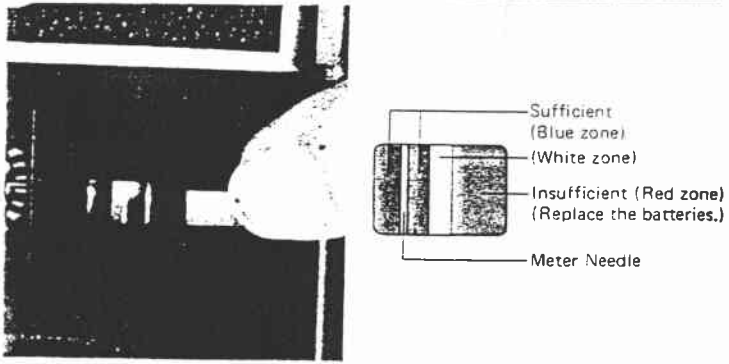
(The running ability may differ because of the performance of batteries.)

• When not using the camera, keep the switch dial at "OFF" to prevent the camera from operating accidentally.

• When changing the batteries, choose six high-quality penlight batteries (size AA) of the same brand and change them all at the same time.

• If the camera will not be used for an extended length of time, the batteries should be taken out of the battery compartment to prevent possible damage to the terminals from battery corrosion.

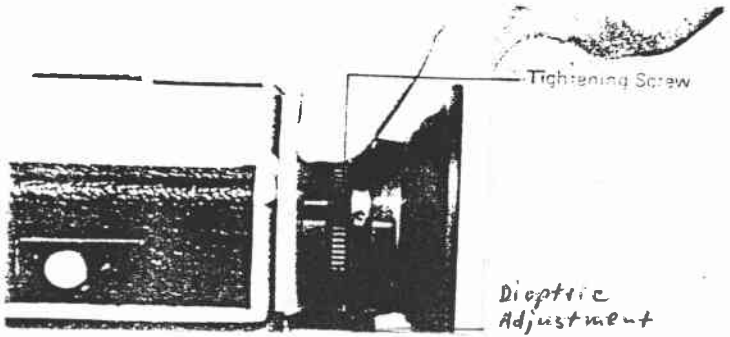



## 3 Checking the Batteries

If there is not enough voltage the camera does not work properly. It is advisable to check the batteries occasionally.

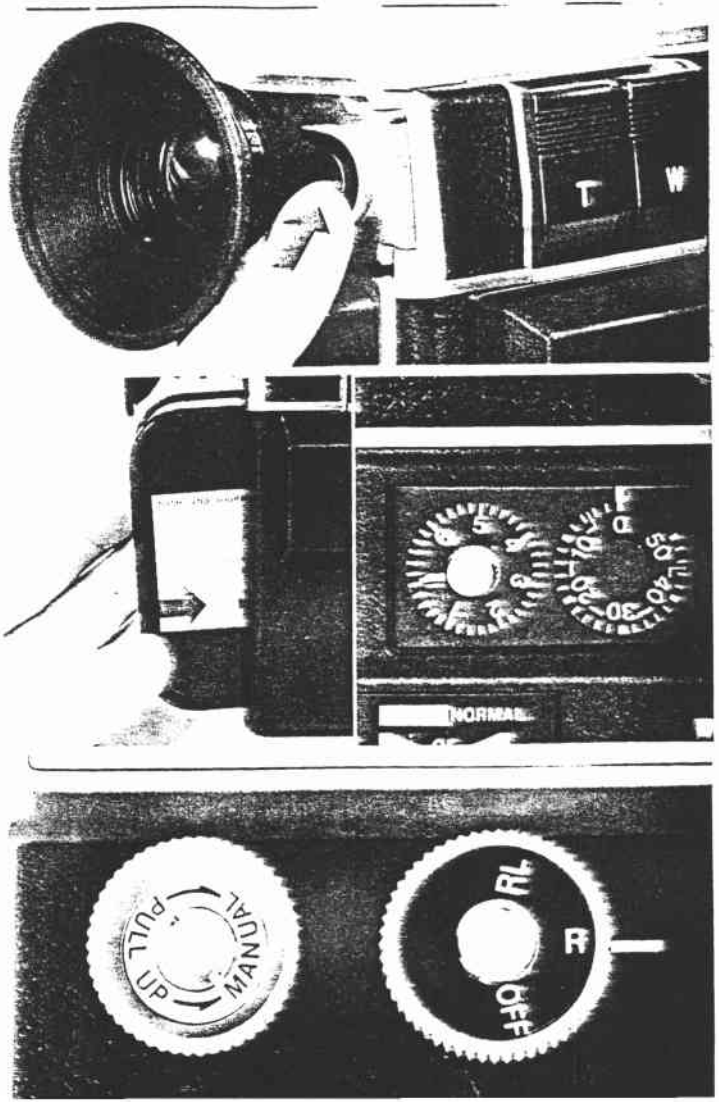
- Turn the switch dial to "R", push the battery check button and read the needle in the check window.
- When the needle points to the blue zone, the voltage is satisfactory and you can use any shooting technique. When the needle is in the white zone, the voltage is enough only to run the film at 18 fps. When the needle is in the red zone, the voltage is too low and you should change the batteries. With the needle in the red zone, even if the camera seems to work, the voltage is not enough to operate the exposure system properly, so be sure to change the batteries.




## 4 Eyepiece Adjustment

Look into the viewfinder while directing the camera to a bright subject. Loosen the tightening screw and rotate the eyepiece adjustment ring till you can see the lines of the split image screen clearly in the center of the viewfinder. Then, close the tightening screw.

- Without adjusting the eyepiece to your individual eyesight, you cannot focus correctly.
- The microprism rangefinder can be interchanged at the Canon Station written on the last page of this instruction booklet and the only charge will be its actual cost.




## 5 Loading the Film

- Open the rear cover by pushing the opening button.
- Insert the film cartridge with the identification label facing the film type window.
- Close the rear cover by pressing it to the former position.

When you hear a click the cover is locked.

FILM SPEED

The film speed is automatically set with the insertion of a film cartridge and no manual adjustment is required.

The following film cartridges can be used.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tungsten Type: | ASA | 25 | 40 | 64 | 100 | 160 | 250 | 400 |
| Daylight Type: | ASA | 16 | 25 | 40 | 64 | 100 | 160 | 250 |

FOOTAGE COUNTER

The footage counter turns according to the length of exposed film. One mark equals 2 ft. The counter returns automatically to "0" when the back cover is opened.

- When the cartridge is out, the counter does not work.

FRAME COUNTER

One scale of the counter equals two frames of film. One full turn equals 72 frames (1 ft).

- To set the frame counter, rotate its knob and set the indication needle at "0", so you can see how many frames you have exposed.

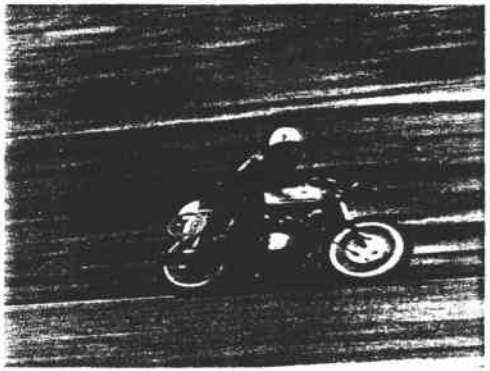
# Preparations for Electric Eye Operation

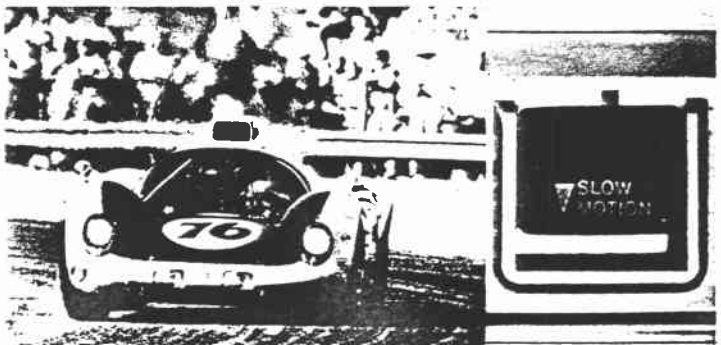
## 1 Set the switch dial at "R".

All the electric circuits are on and the shutter is ready to work. "OFF" is the safety position at which the electric source is off to prevent the shutter and the exposure meter from operating accidentally.

## 2 Make sure that the EE/manual aperture control ring is pushed in.

- If the EE/manual aperture control ring is pulled out, the camera is switched to manual operation and the EE exposure control does not work.






## 3 Set the filming speed.

The standard filming speed for Super 8 movie is 18 fps and the movement of the subject will then look most natural when projected.

- Turn the filming speed dial to 18. Make sure that the index is correctly set toward the number.
- When projecting the film shot at 24 fps, motion is 1.3 times slower than when taken at the standard 18 fps. Use 24 fps for the following effects.
  - Making standard sound film
  - Slowing down the motion
  - Lengthening the zooming time
  - Avoiding blur while panning

The slow-motion shooting mechanism is built in.
This is especially useful for analyzing fast moving animals or sport events.

- The instant slow-motion is shot at approximately 54 fps. When the instant slow-motion switch is pressed while shooting, the speed of the film will suddenly change to slow-motion shooting.

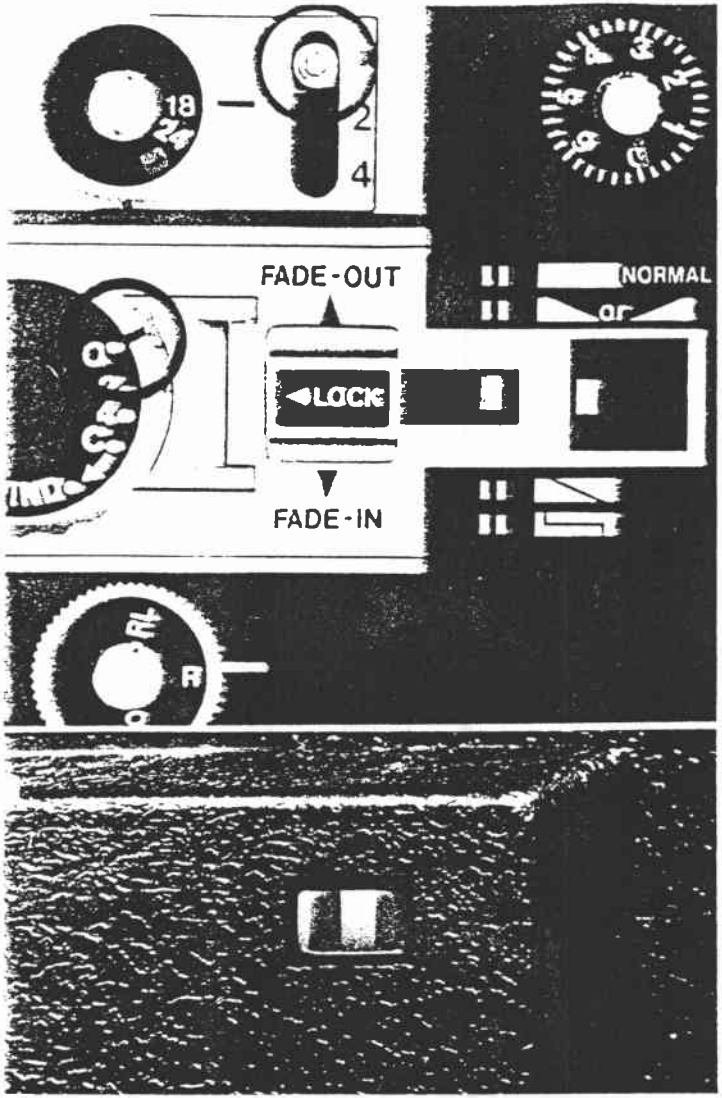
If you want slow-motion pictures from the start, press down the switch first, then pull the trigger. To stop it, release the trigger first, then the slow-motion switch.

- The instant slow-motion switch works only when it is pressed down. Be careful not to release it during slow-motion shooting.
- The instant slow-motion switch should be pressed down quickly. If it is pressed slowly, several frames may not be correctly exposed.

The instant slow-motion switch is useless in single frame shooting, and if it is pressed the frame shall be over-exposed.

- The movement of slow-motion shooting when projected is about three times as slow as the ordinary one. Use it in the following cases:
  - To avoid blurs during panning or while you are moving.
  - To slow down the motion

Single frame shooting is explained in detail in page 31.




## 4 Verify that the variable shutter control ring is set at "O" (OPEN).

If it is not at "O", proper exposure cannot be obtained.

- When the variable shutter control lock button is moved in the direction of the arrow, the variable shutter control ring unlocks and may be turned freely.
- The ring is locked by setting the index at the "O" position and pushing the button in the opposite direction of the arrow. The variable shutter control lock indicator window turns orange to confirm it has been locked. When the lock is released, it turns blue.
- Only three positions, O (OPEN), 2 and 4 may be locked. The others cannot.

## 5 Set the Exposure Adjustment Knob at "•" on the Exposure Adjustment Scale.

If the knob is not at "•" during ordinary electric eye operation, correct exposure can not be obtained.

## 6 Make sure that the Rewind Setting Indicator Turns Orange.

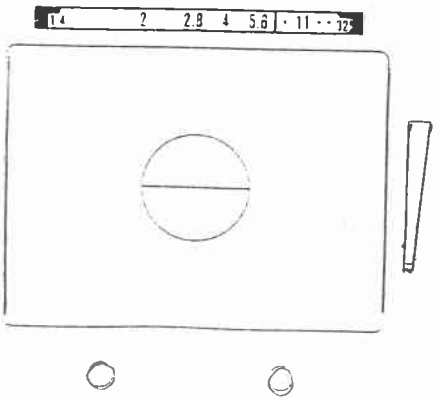
When the rewind setting indicator turns blue, press the rewind mechanism cancellation button. This will have the same effect as when it is orange. When the trigger is pulled and shooting continues, the rewind setting indicator automatically turns blue.

(See the paragraph about the film rewinding button on page 23).

## 7 Check the Film Transport Indicator.

Looking at the film transport indicator on the side of the body, pull the trigger and run the film slightly. If the red and white lines move smoothly, the film is driven properly.

You can also check by means of the film transport indicator lamp in the viewfinder. If the lamp blinks, the film is driven properly. Otherwise, remove the cartridge and load it again.




# EE Shooting

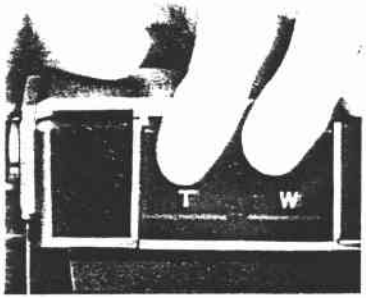
## 1 Holding the camera

Hold the handgrip with your right hand and place the forefinger on the trigger. Focusing and zooming are done with your left hand.

- If the camera is not held firmly enough during shooting, the scenes will look unstable when projected. Be especially careful in telephoto pictures or in zooming. It is advisable to use a firm tripod and the Remote Control Switch 60 or Remote Control Switch 3, or keep your right elbow pressed firmly against your body.

## 2 Looking through the viewfinder

You have all necessary information in the viewfinder because the diaphragm scale, the exposure meter needle, the exposure warning marks, the split image screen rangefinder, shutter angle indicator, the film end caution lamp, and film transport indicator lamp are built into it.



## 3 Zooming

When you rotate the zooming ring manually or push the power zooming button, the magnification of the subject changes. Therefore, you can compose the picture easily and you can add zooming effects to your pictures, that is, continuous changing of the magnification.

### POWER ZOOMING

Zooming begins by pressing either of the power zooming buttons. The magnification changes with the button "T" toward the telephoto area, and with "W" toward the wide-angle area. When you push the buttons during shooting, zooming effects are easily obtained.

The zooming speed can be switched in two steps. When the zooming speed switch on the side of the camera is at "H", the speed is fast (approx. 5 seconds); "L" is for low speed zooming (approx. 7 seconds); and "M" is for manual zooming.

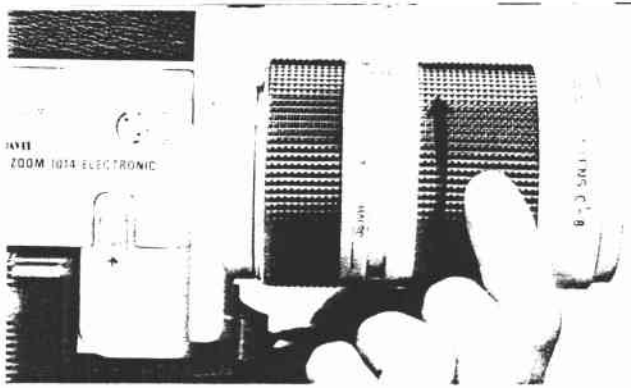
### MANUAL ZOOMING

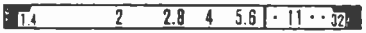
The power zooming system gives the zooming effect in a fixed time. If you want a more rapid, or slower zooming effect, or when you aim at a more exact composition, use the manual zooming ring.

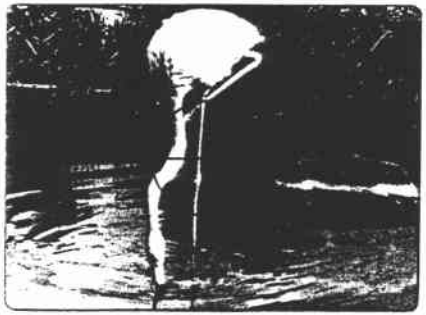
- Turn the zooming speed switch to "M".

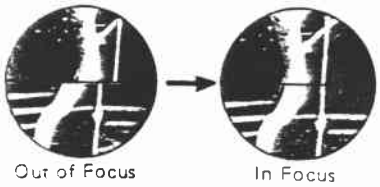
Hold the zooming lever as if pressing it with the finger and turn the zooming ring. Be careful not to pull it as it may accidentally turn to set the macro position.

- Manual zooming can be performed without setting the zooming speed switch at "M" but a smooth effect will not be possible.
- The viewfinder magnification is life-size when the focal length is 15mm.
- Effective manual zooming techniques may be acquired through repeated practice.






## 4 Focusing

Rotate the focusing ring while looking through the viewfinder until the point where the divided image of the subject on the split-image screen can be seen correctly matched in the center of the viewfinder. You can focus more easily and exactly at the longest focal length.

Once the subject is focused, it is always in focus even during zooming. Therefore, it is advisable to focus first at maximum magnification (70mm) and then return to the required magnification.

## 5 Composition

The viewfinder is of the single-lens reflex type and has no parallax. All that you see in the viewfinder will be exposed on the film. Decide your composition in the full frame. Framing the subject can be decided by changing distance or by zooming.

## 6 Checking the meter needle

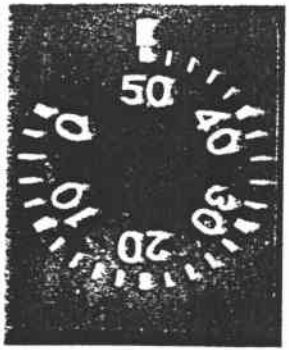
When the trigger is pulled lightly, the meter needle makes a full swing to the left, and then indicates the proper exposure.

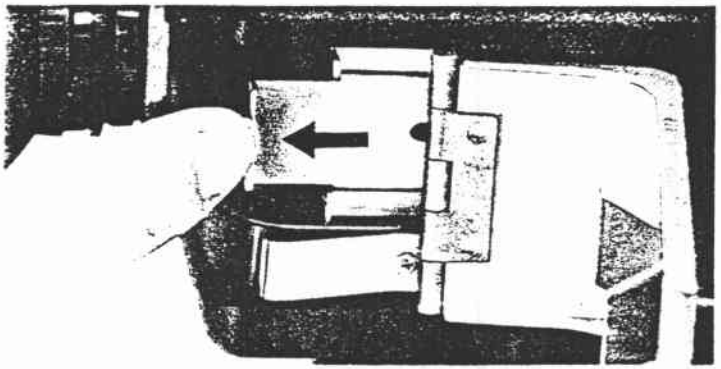
When the needle is out of the red warning marks, you are ready to shoot. Pull the trigger all the way to begin filming.

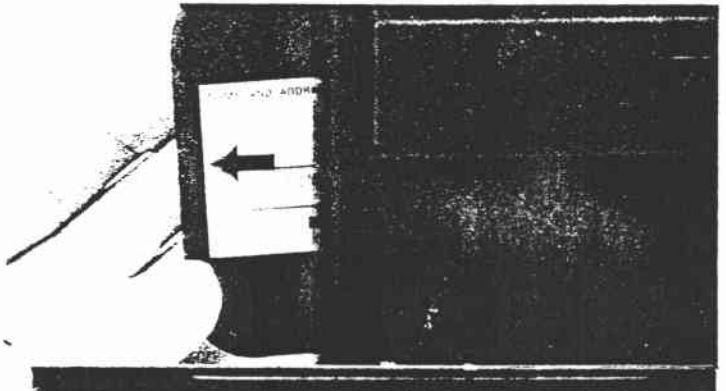
- The exposure meter does not work if the switch dial is set at "OFF".
- If the needle is in the left red warning mark, it is warning of under-exposure, so the lighting must be increased. If the needle is in the right red warning mark, it means over-exposure. Adjust the exposure with the variable shutter control or use an ND filter.
- When the trigger is not pulled, the needle stays in the right red warning mark.
- When the trigger is pulled while the switch dial is set at "RL", the meter is working continuously and the needle moves according to the brightness of the subject.

## 7 Pulling the trigger all the way

The film begins to run and you start shooting.







## 8 End of shooting and removing the film cartridge

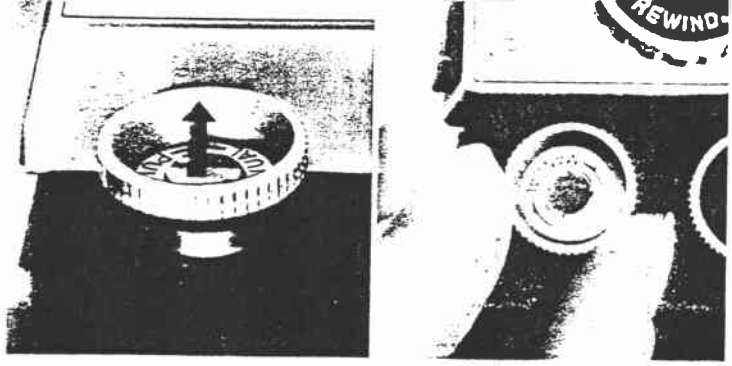
A Super 8 cartridge contains 50 feet of film running one way. With this camera, when 48 feet of the film have been exposed, an orange lamp lights up at the bottom right of the viewfinder to caution that the film will end after 2 feet. When the film end caution lamp lights up, take note of the film left and run it the full 50 feet. When the full 50 feet of film are shot and film stops running, the film transport indicator lamp stops blinking. Then open the rear cover and remove the film cartridge.

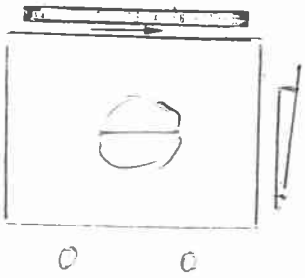
- When removing the cartridge, pull the cartridge removing lever under the cartridge guide and you can easily remove it.
- The exposed film has a cut-out on the perforation and is easily distinguishable from the unexposed one.
- Send the exposed film promptly to an authorized processor.

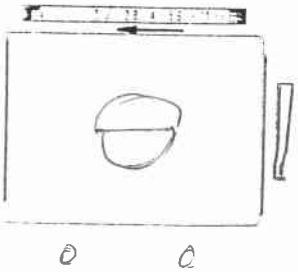
## 9 Changing unfinished film

A Super 8 movie camera uses a cartridge. Therefore you can exchange cartridges of different types of film even when a cartridge is only half exposed. By exchanging the cartridges, you lose only 2 inches or even less, including the exposed part of the film and some of the film adjacent to it.

- To prevent the last picture from undesired exposure, run a little blank film before changing the cartridge.
- By changing the cartridges the footage counter automatically resets at "0". Read the footage counter before removing and write down the number on the removed cartridge as a reminder.
- The film end caution lamp is coupled to the footage counter and does not light if a half-used cartridge is loaded. Confirm the film end with the footage counter or the film transport indicator lamp.



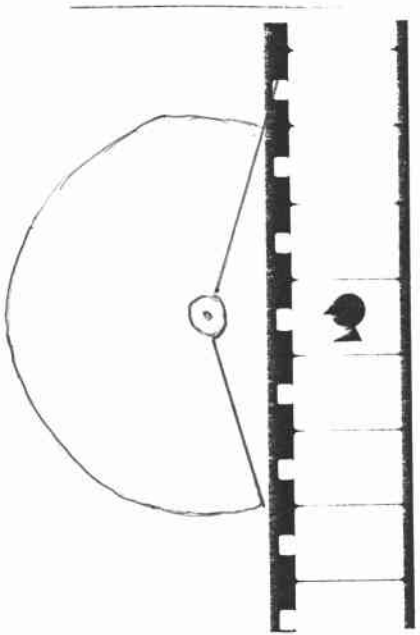




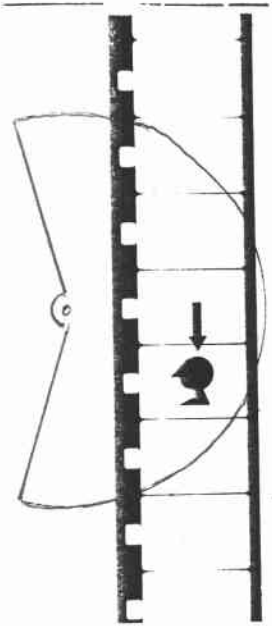
# Manual Aperture Control Shooting

When the EE/manual aperture control ring is pulled out, the EE mechanism is released and you can set the aperture manually. Turn the EE/manual aperture control ring looking at the exposure indicator in the viewfinder and decide the exposure. This method is especially useful when you take a subject against the light, or when you want to emphasize with a high-key or low-key effect. When you push in the EE/manual aperture control ring, you can perform EE shooting again.

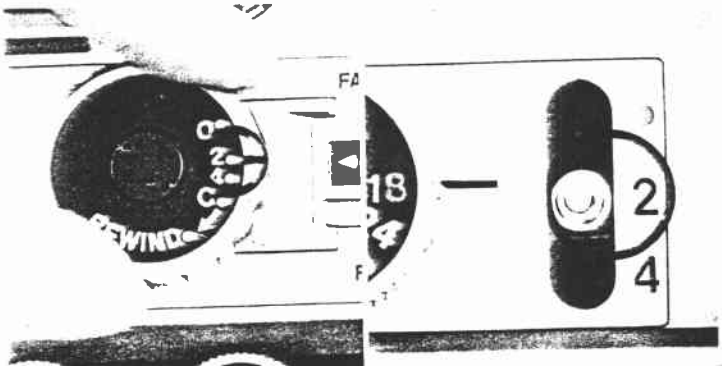
- When the EE/manual aperture control ring is pulled out, the indicator in the viewfinder moves to the red mark on the left edge.
- When the EE/manual aperture control ring is turned counterclockwise the aperture closes. When it is turned clockwise, it opens. When the needle is in the red warning mark on the left edge or on the right edge, it does not move anymore even if the ring is rotated in the same direction.
- When you change the filming speeds from 18 fps to "SLOW MOTION" in manual aperture control, stop shooting and open the aperture by 1-1/2 f/stops in the case of instant slow-motion (approximately 54 fps) and 1/2 f/stop in the case of 24 fps.



The film stops for exposure.



The exposed frame advances.




# Variable Shutter Control

## 1 Variable Shutter Control Mechanism

The shutter mechanism of an 8mm movie camera is coupled to the film advance. The exposure is decided by the rotation of two semicircular leaves with a given angle. When the open part of the leaves faces the aperture gate, the film stops for exposure, and when the leaves shut the aperture gate the film advances.

At the standard 18 fps speed, this movement is repeated 18 times per second. The wider the angle of the leaves, the slower the shutter speed and the longer the exposure. When it is narrow, the shutter speed is fast and the exposure is short.

The angle of the leaves are called the shutter angle and it is fixed in ordinary 8mm movie cameras. The exposure is adjusted only by the aperture.

With the Canon Auto Zoom 1014 Electronic, the combination of the factors of exposure can be changed by means of the shutter angle and the aperture. Furthermore, with the fading and rewinding mechanisms, lap dissolve and superimposition become very easy.

The shutter angle can vary from 15° to 0° continuously; a two step scale is marked in between.

Set the variable shutter control at "O" to lock it during ordinary shooting.

## 2 Variable Shutter Control Ring

The numbers "2" and "4" on the scale of the variable shutter control ring indicate that the shutter angle becomes 1/2 and 1/4, and the exposure is changed to 1/2 and 1/4 respectively. At "O" it is fully opened. At "C" the shutter closes and does not expose even when the trigger is pulled.

## 3 Exposure Adjustment Scale

The shutter angle changes the length of exposure on the film plane and the meter is compensated by the exposure adjustment scale. The meter will communicate the brightness of the light to the aperture control for proper exposure.

- Press and slide the exposure adjustment knob and match it to the numbers on the exposure adjustment scale.

When the shutter angle is set at "2" or "4", set the knob at the same number.

## 4 Uses of the Variable Shutter Control Ring — Adjusting Exposure

When shooting people against the light, the subject will be under-exposed. In such situations, move the exposure adjustment scale to "2" or "4" for proper exposure.

When shooting a theater stage under strong spotlights, the darkness around it may cause the picture to be over-exposed. In such situations, reduce the shutter angle so that proper exposure can be obtained and blur be avoided at the same time.

- The numbers "2" and "4" on the scale of the variable shutter control ring adjust exposure to 1/2 and 1/4 respectively.
- Exposure can also be adjusted by means of manual aperture control.

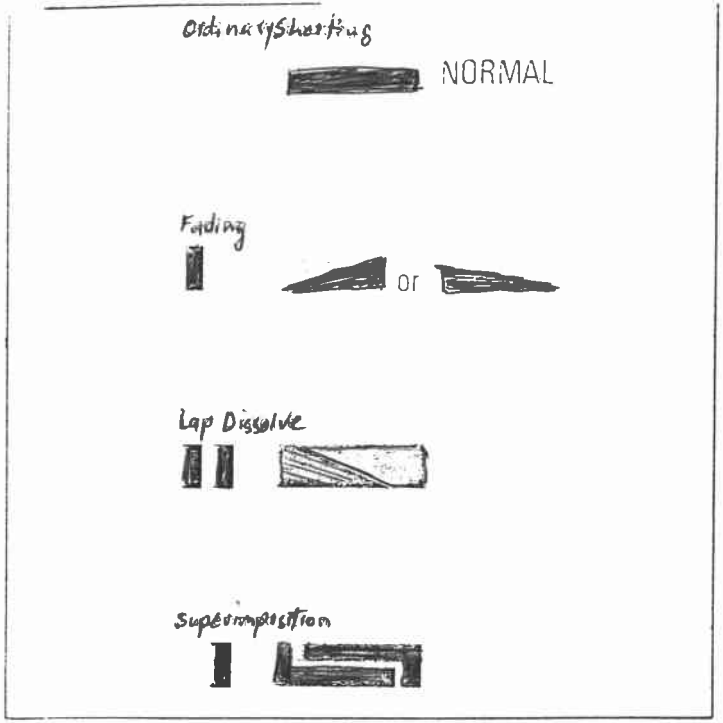
## 5 Uses of the Variable Shutter Control Ring — Prevention of Image Blur

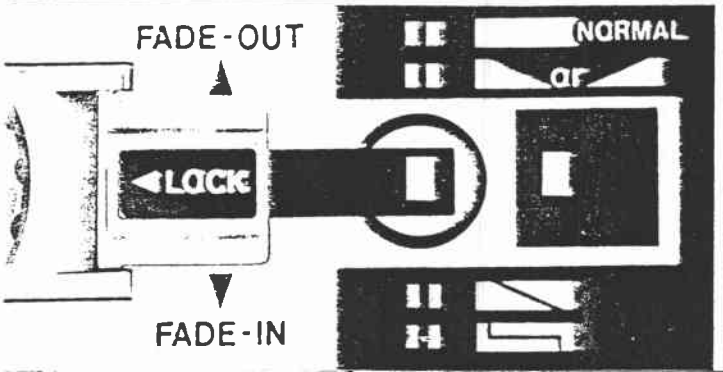
- The relation of filming speed and exposure time changes with the different shutter angles, as shown in the following chart.

| Filming Speed / Angle Scale | 18 fps | 24 fps | Instant slow-motion(54 fps) |
|---|---|---|---|
| O (150°) | 1/43 sec. | 1/58 sec. | 1/129 sec. |
| 2 ( 75°) | 1/86 sec. | 1/115 sec. | 1/258 sec. |
| 4 (37.5°) | 1/172 sec. | 1/230 sec. | 1/516 sec. |

As shown in the chart, if the shutter angle varies, the shutter speed changes even when filming speed remains unaltered. When shooting moving subjects such as sports, blur can be prevented by reducing the shutter angle. Thus, each frame will be sharply exposed.

When you change the shutter angle in ordinary EE shooting, do not fa to set the exposure adjustment scale, otherwise proper exposure canno be obtained.




# Shooting Techniques

## 1 Marks for Various Shooting Techniques

With the Canon Auto Zoom 1014 Electronic, fading, lap dissolve and superimposition can be done by combining the mechanisms of variable shutter control and rewinding.

A plate on the side of the body indicates how they should be combined.

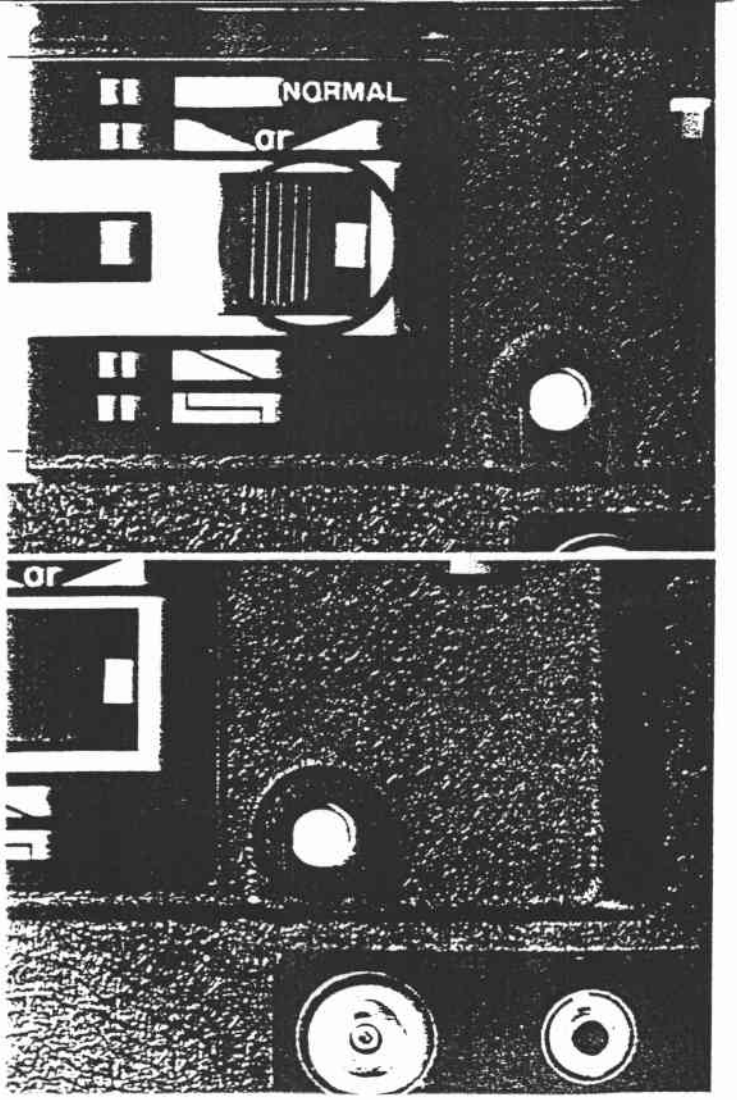
• The left column indicates the fading setting indicator, the right column is for film rewind indicator. They should be combined as appears in the following chart.

| Marks / Shooting techniques | Fading setting indicator | Film rewind indicator |
|---|---|---|
| Ordinary shooting | Orange | Orange |
| Fading technique | Blue | Orange |
| Lap dissolve | Blue | Blue |
| Superimposition | Orange | Blue |

## 2 Fading Setting Indicator

When the fading setting button is moved to the right, the variable shutter control ring may be turned by hand. At this time, the fading setting indicator turns blue to show that the ring is free. When it is locked, the indicator turns orange.

• For ordinary shooting, the variable shutter control ring should be at "O" and locked. This prevents the ring from turning accidentally while shooting.




## 3 Film Rewind Indicator

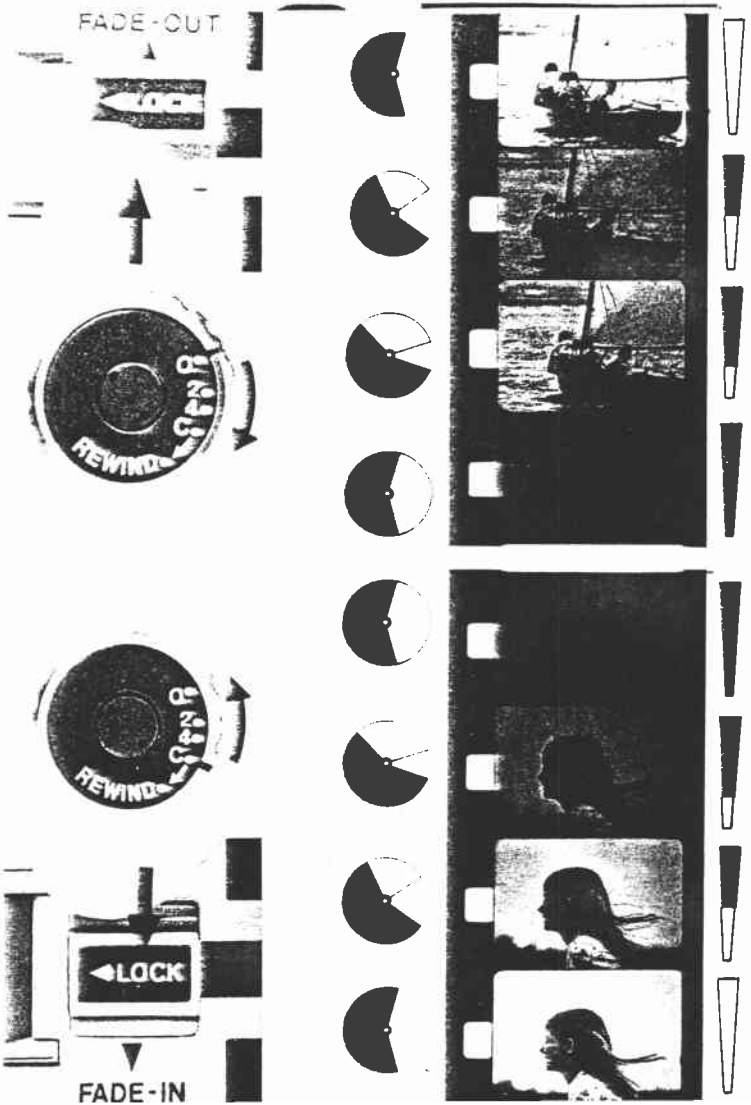
It is used to rewind film for superimposition and lap dissolve.

- The fading setting indicator must first turn blue by sliding the fading setting button to the right, or it will be impossible to move the film rewind switch button to the left.
- When the film rewind switch button is moved to left and the indicator turns blue, the rewinding mechanism is set and ready inside the camera.

Once the film rewind indicator turns blue, it is impossible to change it to orange by hand, because the rewinding mechanism is programmed inside the camera.

## 4 Rewind Mechanism Cancellation Button

Press this button after locking the variable shutter control ring at "O" when you want to stop superimposition or lap dissolve or when you have set the film rewind switch button to the left (blue) by mistake. The film rewind indicator will remain blue even when the rewind mechanism cancellation button is pressed. But the rewinding mechanism inside the camera will be cancelled for ordinary film driving. After pulling the trigger and shooting for a while, the indicator will automatically turn orange.




## 5 Auto Fading (blue ▮ orange ◣ or ◢)

Fading is commonly used to show a change of scenes, or to introduce them or end them.

- When the picture gradually darkens, the effect is called fade-out. When the picture brightens gradually, the effect is called fade-in.

With the Canon Auto Zoom 1014 Electronic, fading can be done both automatically and manually.

Move the fading setting button to the right and set so that the fading setting indicator turns blue freeing the variable shutter control ring.

### FADE-OUT

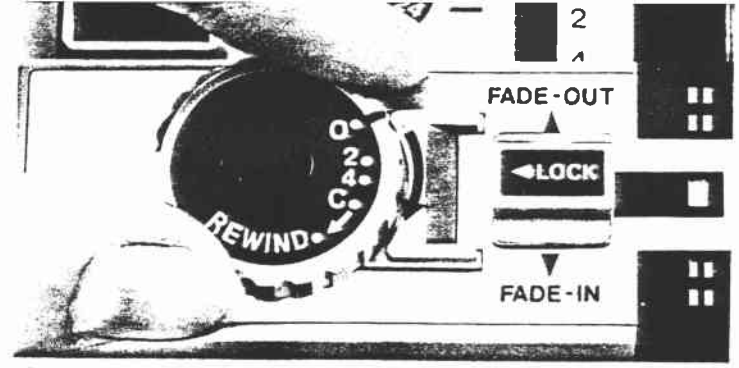
- While pulling the trigger, push the fading setting button upwards. The variable shutter control ring will begin rotating to the "C" position and fading is performed.
- Confirm the fade shooting condition at the shutter angle indicator on the right side of the viewfinder. When the ring begins rotating, the indicator gradually turns red. When the shutter closes, it is completely red and indicates the completion of fade-out. Then stop pulling the trigger.
- The trigger can be pulled even when the shutter is closed. Take care not to waste film.

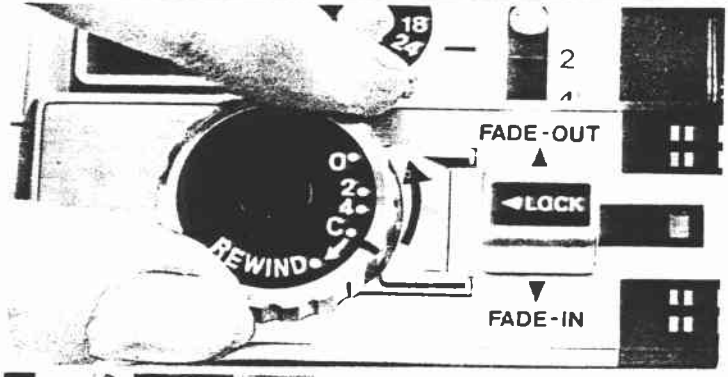
### FADE-IN

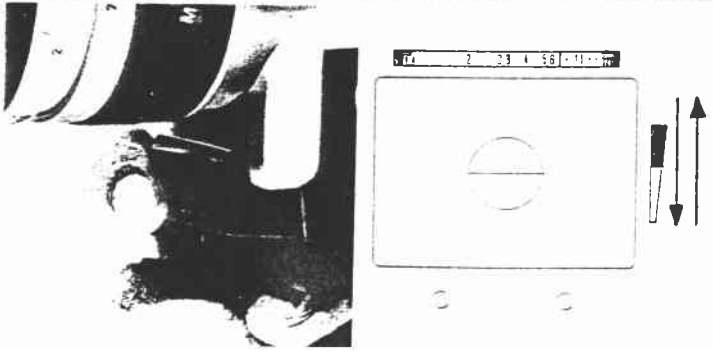
- While pulling the trigger, pull down the fading setting button. The variable shutter control ring automatically turns toward the "O" position and fade-in is performed.

At this time, the red color of the shutter angle indicator in the viewfinder gradually disappears.

- When the scene begins with a fade-in, unlock the variable shutter control first and then turn the variable shutter control ring to the "C" position by hand and start shooting.



## 6 Manual Fading

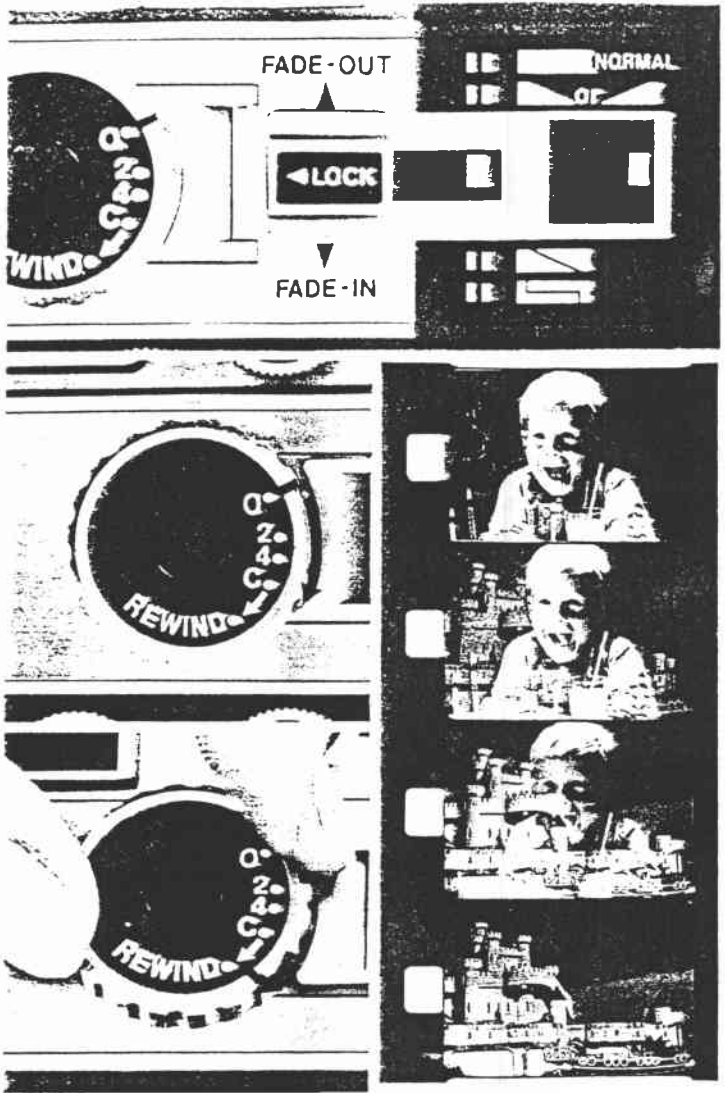
Automatic fading serves for shooting at a given time and speed. When shooting for different lengths of time is desired, operate by hand.

FADE-OUT

- Unlock the variable shutter control lock by sliding the fading setting button to the right to make the fading setting indicator turn blue.
- Pull the trigger and turn the variable shutter control ring while looking at the shutter angle indicator on the right side of the viewfinder.

FADE-IN

- Unlock the variable shutter control lock by sliding the fading setting button to the right to make the fading setting indicator turn blue.
- Set the variable shutter control ring to "C" beforehand. Pull the trigger and turn it to "O" for fade-in shooting.
- When the variable shutter control ring is set at "O", the red in the indicator window inside the viewfinder will gradually disappear.
- If you keep pulling the trigger, ordinary EE shooting is possible without interruption.




## 7 Lap Dissolve ( blue blue )

Shooting both fade-outs and fade-ins is called lap dissolve.

This procedure with one scene fading away gradually while the next scene appears is used to change scenes smoothly.

- Unlock the variable shutter control lock to free the variable shutter control ring by sliding the fading setting button to the right.
- Move the film rewinding switch button to indicate blue while pulling the trigger.

In this operation, the film transport indicator lamp stops blinking.

- Continue pulling the trigger. Lap dissolve starts and when the variable shutter control ring comes to the "C" position, the shutter will stop automatically.
- To rewind film, turn the ring to the "REWIND" position.

When the film is rewound, it automatically stops.

- When the film is not rewound completely, you cannot start shooting even when you pull the trigger. Be careful not to remove your hand from the ring while rewinding the film. When the hand is removed, turn the ring to the "REWIND" position again to complete rewinding.
- Pull the trigger and the film transport indicator lamp starts blinking.

The ring will turn to the "O" position and lap dissolve ends. Keep pulling the trigger to continue ordinary shooting from there on.

Approximately 50 frames of lap dissolve is possible.

### RESETTING LAP DISSOLVE

When the film is not driven properly in lap dissolve, push the rewind mechanism cancellation button and pull the trigger.

Continue pulling the trigger until the variable shutter control ring turns to the "C" position and, from there, returns to the "O" position.

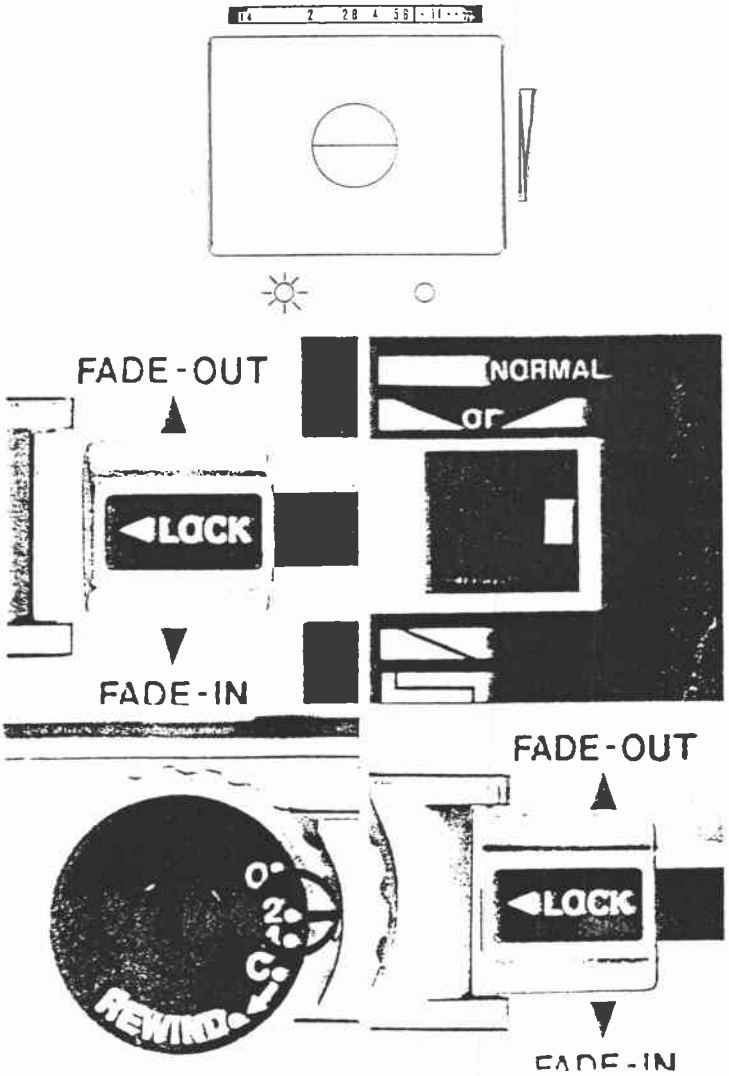
When the variable shutter control ring turns to the "O" position, the fading setting switch moves automatically to show the orange mark. Stop driving the film and then reset lap dissolve.

## 8 Film Transport Indicator Lamp

This lamp is used to check if the film is properly driven.

The lamp blinks when the film advances. If the film is not driven properly, the lamp stops blinking.

In lap dissolve or in superimposition, the lamp stops blinking when you begin a fade-out. The lamp starts blinking when you perform fade-in after rewinding the film.




If the lamp does not blink in this case, you know that there was some trouble during fading out or rewinding.
If the lamp stops blinking in ordinary shooting, push the rewind mechanism cancellation button and then start shooting again.
In lap dissolve or in superimposition, if the lamp does not blink after rewinding the film, remove the cartridge and advance the film about 10cm (4') by turning the axis of the cartridge manually.
If, nevertheless, the film does not advance, change the cartridge.

- After removing the cartridge, keep pulling the trigger until the rewind switch button switches to show the orange mark.

Then you can reset lap dissolve immediately.

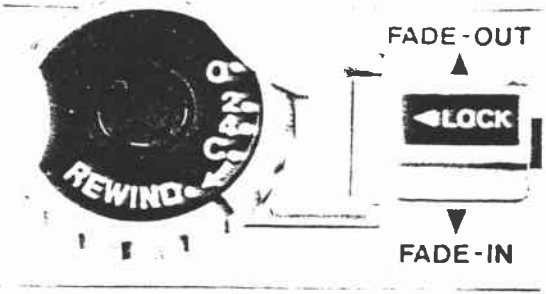
## 9 Superimposition ( orange blue )

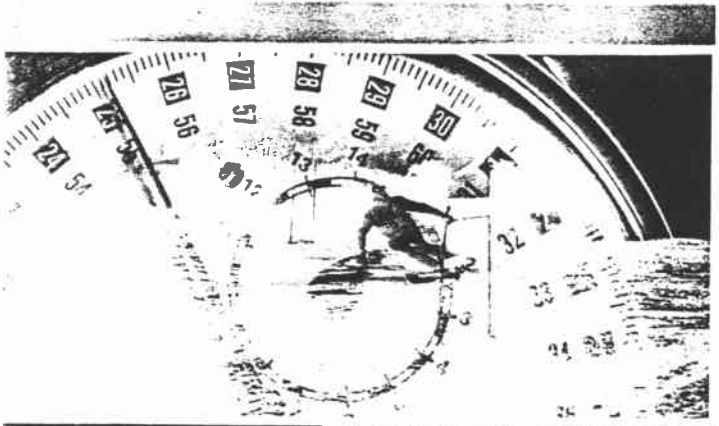
When fade-in and fade-out are excluded from lap dissolve, it is called superimposition. Usually, this serves for shooting titles.

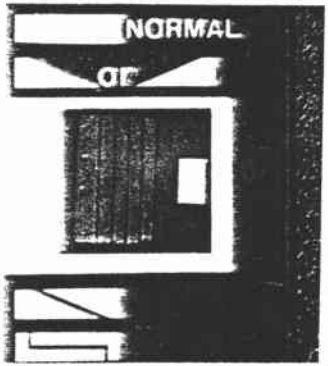
- First unlock the variable shutter control lock by sliding the fading setting button to the right and set it to the blue mark. Next move the film rewind switch button to the left to point to the blue mark.

If the variable shutter control lock is not released, the film rewind switch button will not move to the left, but this is not a breakdown.

- Set the variable shutter control ring to "2" and lock the ring by sliding the fading setting button to the left.
- Continue to pull the trigger until the film stops automatically. When the film stops running, unlock the variable shutter control ring. Turn the ring and match the index to the "REWIND" position and rewind the film completely.
- Return the variable shutter control ring to the scale "2", and lock it Continue to shoot. When you finish superimposition, you hear a "click" Then return the variable shutter control ring to "O" (OPEN) and lock it.
- When titling, first shoot the desired scenes with proper exposure, and then shoot the titles written on a black background.





RESETTING SUPERIMPOSITION

In superimposition, if the film is not properly driven, push the rewind mechanism cancellation button and pull the trigger until the film rewind switch button returns to its former position to show the orange mark. Then set for superimposition again.

## 10 Cancelling the film rewinding mechanism

When the film rewind switch button is set by mistake or when you want to cancel it after having set it, the operation is as follows:

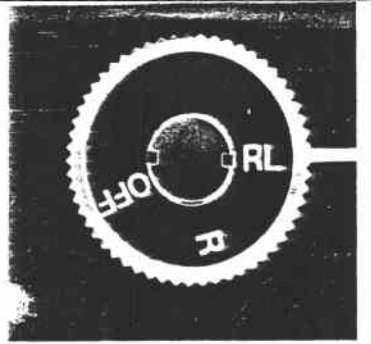
1) When you set lap dissolve and cancel before pulling the trigger, push the rewind mechanism cancellation button, and lock the variable shutter control ring at "O" by sliding the fading setting knob to the left.
   Then ordinary shooting can be performed.
2) When you set lap dissolve and then cancel it for ordinary shooting after pulling the trigger, push the rewind mechanism cancellation button while pulling the trigger until the variable shutter control ring turns to the "C" position. Set the variable shutter control ring at the "O" position by hand. Then lock the variable shutter control ring by sliding the fading setting knob to the left.

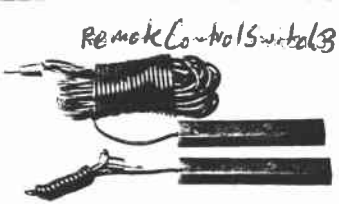
PRECAUTIONS ON LAP DISSOLVE AND SUPERIMPOSITION

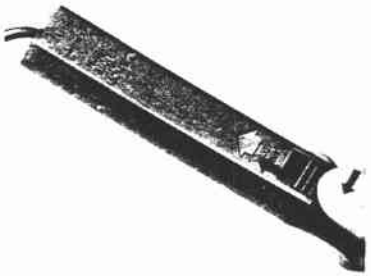
The film rewinding action of the Super 8 camera takes place inside a small film cartridge and, consequently, even the slightest change tends to cause troubles.

Therefore take the following precautions to avoid trouble.

- The film transport indicator lamp stops blinking in fade-outs and starts blinking in fade-ins.
- Use filming speeds of 18 or 24 frames per second.
- Rewind immediately after you finish shooting. If the film is left without rewinding for a long time, it will show a tendency to coil and this may cause problems.
- Because of the structure of the cartridge, the first and last 5 ft. of film cannot be rewound (in the range of blue line on the footage counter).





# Variable Use of the Shutter

## 1 Running Lock

The running lock is for continuous shooting. Set the switch dial at "RL" and pull the trigger. The shutter is locked at the running position and the film keeps running even if you remove your hand from the trigger. When releasing the lock, return the switch dial to "R".

## 2 Remote Control

Remote control EE shooting is possible with the combined use of the Remote Control Switch 60 or the optional Remote Control Switch 3, and it is convenient when you set the camera far from you. The Remote Control Switch 60 has a cord of 60 cm (2 ft) for general shooting or to avoid blur in single frame shooting. The cord of the Remote Control Switch 3 is 8 meters (26 ft) long.

The optional Extension Cord E1000 may be used between the camera and the Remote Control Switch. Considerable numbers of the Extension Cord E1000 may be connected, and so it is convenient to shoot from long distance.

### CONNECTING THE REMOTE CONTROL SWITCH

Set the switch dial of the camera at "OFF" and remove the cover of the remote control socket to connect the plug of the remote control switch.

Then set the switch dial at "RL" and pull the trigger as with the running lock. You can set the switch dial while pulling the trigger.

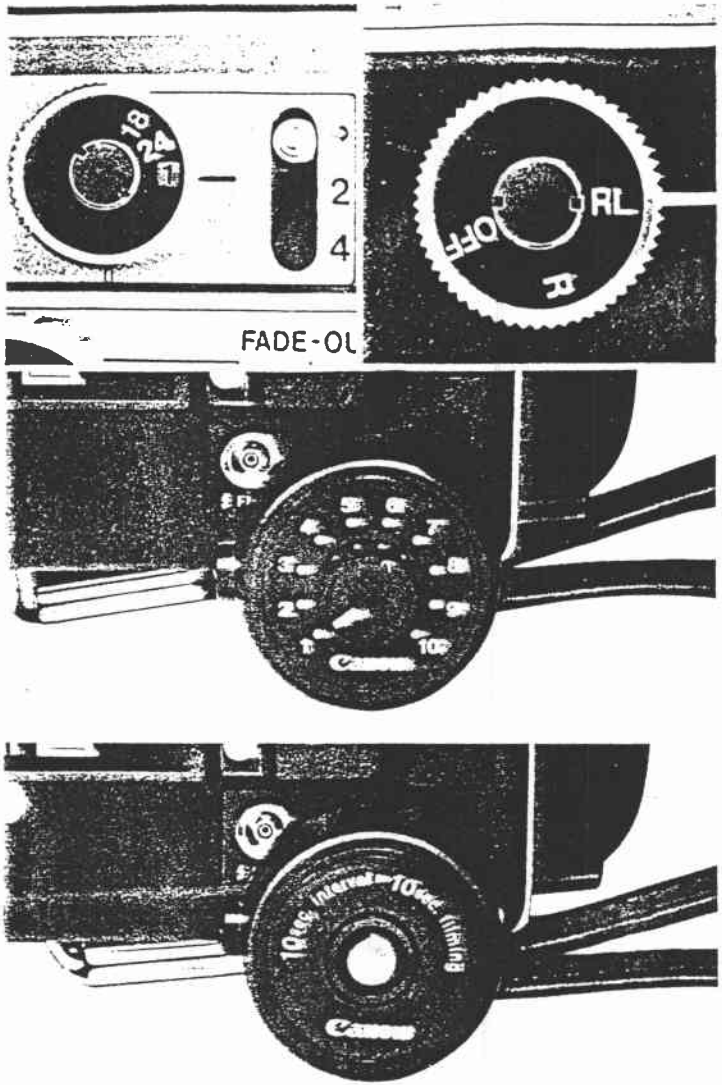
### OPERATION

When you push down the switch of the remote control switch, the film starts running, and when you slide it following the arrow while pressing it, the switch is set as a running lock.

When you use a remote control switch in manual aperture control operations, read out the proper f/stop number in the viewfinder and set the aperture by pulling out the EE/manual aperture control ring and rotating it.

### REMOVING THE REMOTE CONTROL SWITCH

When you remove the remote control switch from the camera, be sure to




turn the switch dial of the camera to "R" or "OFF" beforehand, otherwise the camera starts operating when you remove the remote control switch and you will waste film.

- When the remote control switch is out of use, be sure to set the switch dial at "OFF" to prevent the batteries from being wasted. So be sure to make preparations just before the actual operation.
- Check the conditions of the subject carefully before you operate the camera from a distance.
- If the eye is not against the eyepiece, be sure to close the eyepiece shutter.

## 3 Single-Frame Shooting

The Canon Auto Zoom 1014 Electronic has a magnetic shutter release mechanism, and can perform perfect EE shooting including single-frame shooting with the combined use of remote control switch.

- Single-frame shooting can be performed as follows;

Set the filming speed dial at "1", connect the Remote Control Switch 60 or 3 to the remote control socket of the camera, turn the switch dial to "RL", and press down the button of the remote control switch

- If the switch dial is not set at "RL", correct exposure cannot be obtained.

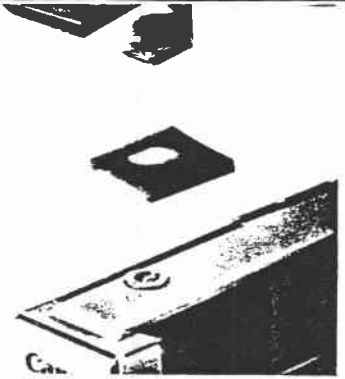
## 4 Self-Timer E

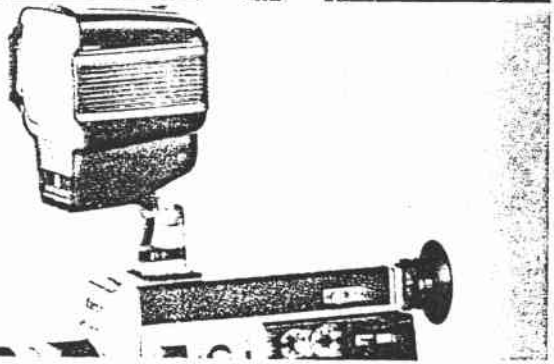
By inserting the Self-Timer E in the remote control socket, unmanned photography can be performed, while maintaining the camera in running (RL) condition. You can join the scene you shoot. Shooting begins ten seconds after you press the start button in the center of the timer, and it lasts ten seconds.

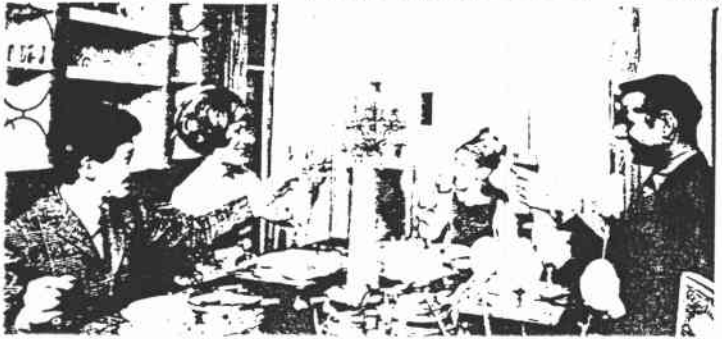
## 5 Interval Timer E

This electronic timer is used to shoot single frames at fixed intervals inserted in the remote control socket after switching the dial to "RL". The interval time is controlled from one second up to 60 seconds by the dial in the center of the timer.

The Interval Timer E will synchronize the electronic flash.







# Cancelling the CCA Filter and Taking Pictures in Artificial Light

A Super 8 camera uses tungsten (artificial light) type of color film and has a built-in CCA filter to adjust the color temperature when it is used in daylight or in "blue lamp" light.

The CCA filter has to be cancelled when pictures are taken in artificial light. To cancel the CCA filter, screw the CCA filter cancellation adapter at the bottom of the camera into the socket on the top of the camera, or place a lighting unit into it.

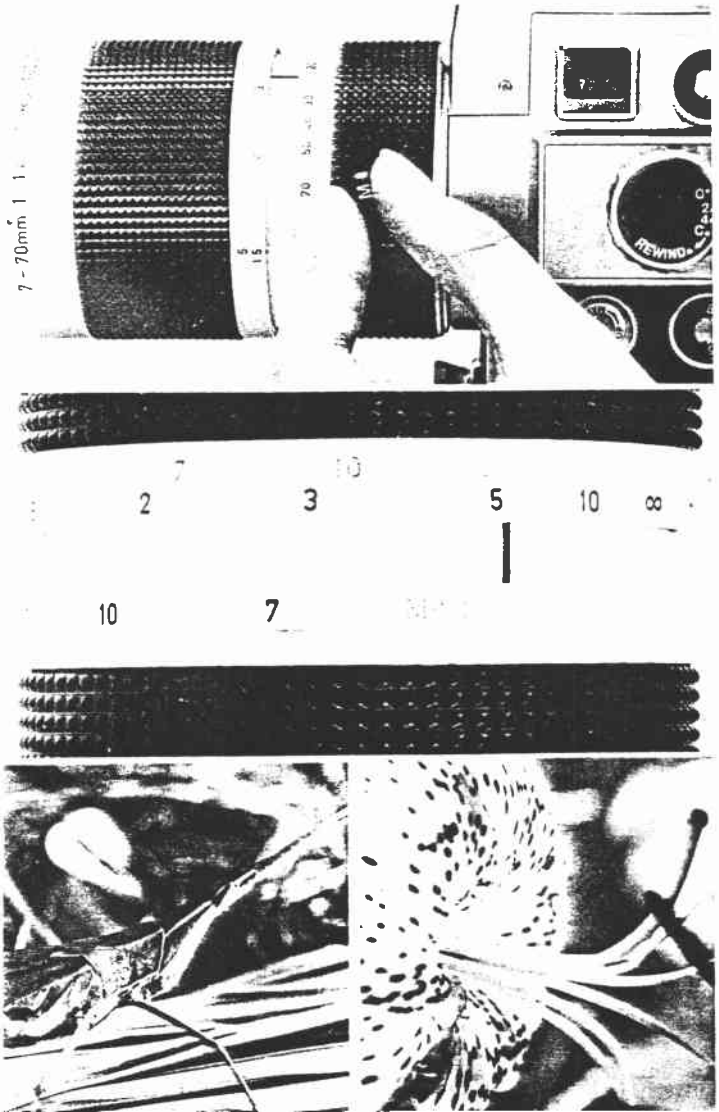
- Connect the lighting unit to the camera firmly. Insert the rubber mat supplied with the camera between the camera body and the lighting unit. It is advisable to turn the camera itself in the final step of the connection.
- When using a high power movie light, avoid getting closer than 1 meter (3.3 ft) as you could burn the subject.

Hold the cord of the lighting unit with the grip to avoid accidents caused by stepping on it.

In macro-shooting it is advisable to use a pair of floodlights instead of a powerful lighting unit.

- Do not use the CCA filter cancellation adapter socket as a tripod socket.

When a cartridge of daylight type film is inserted, the CCA filter is cancelled automatically.




# Macro-Shooting

The Canon Auto Zoom 1014 Electronic has a built-in macro-shooting system and you can easily take super close-up pictures without using any accessory. Make use of it in shooting small insects, animals, flowers, or in titling.

Normally, the zooming ring cannot be turned any further once you reach 7mm. To use macro range, pull out the zooming lever and you will be able to rotate the zooming ring in the macro range.

Turn the zooming speed switch to the "M" position.

Look through the viewfinder and focus at the subject. As it is rather difficult to focus with the focusing ring, adjust the focus by rotating the zooming ring keeping it within the area of "MACRO".

Blurs are especially displeasing in macro pictures. It is advisable to keep the camera steady by mounting it on a copy stand or on a tripod and to use the Remote Control Switch 60 in these operations.

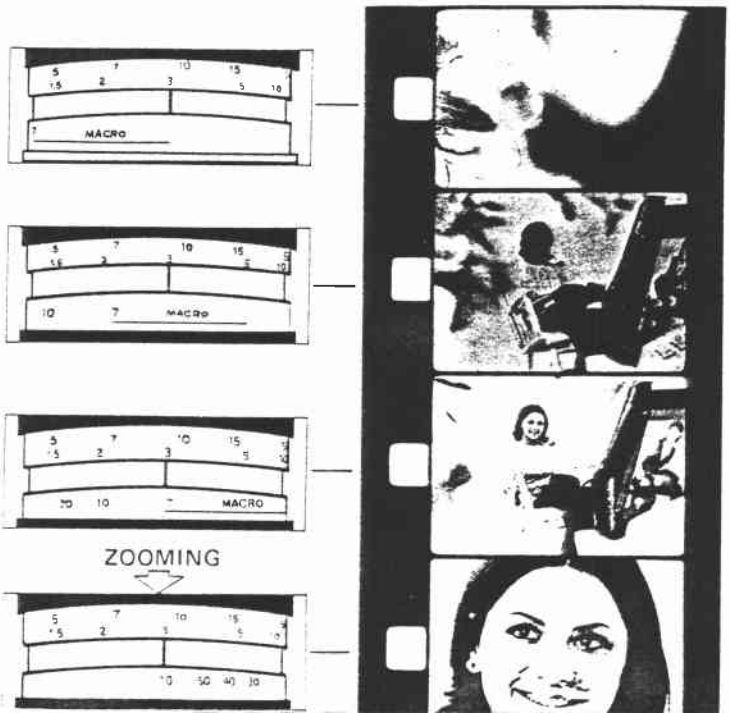
• In macro-shooting, it is advisable to select the aperture between f/5.6 and f/11 by adjusting the intensity of light.

You can get as close as a distance of 189mm (7-7/16") from the film plane indicator to the subject and 10mm (3/8") from the tip of the lens; 31mm x 22mm area (1-1/4" x 7/8") on the full frame, setting the focusing ring at infinity, and 190mm (7-1/2") from the film plane indicator to the subject; 32mm x 23mm (1-17/64" x 29/32") are on the full frame, setting the focusing ring at 1.5m (5').

In macro-shooting, the depth of field becomes extremely shallow. So it is most advisable to focus carefully and exactly, and to set the diaphragm aperture as small as possible (at least smaller than f/5.6) with the help of brighter lights.

EYEPIECE SHUTTER

• Be sure to set the eyepiece shutter in the "C" position to prevent reverse incoming light when the eye is not against the eyepiece. Otherwise, direct light may enter from the eyepiece and cause ghost images on the film.




# Combined Use of Macro-Shooting and Zooming Effect

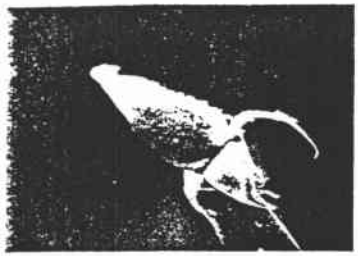
In macro-shooting, the zooming ring is used for focusing. Focus by turning the zooming ring in the macro range indicated by the yellow line. The focused range moves between the nearest focal distance in macro-shooting and the focused distance set beforehand with the focusing ring.

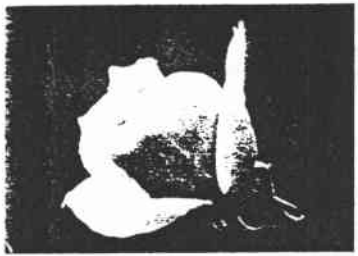
For instance, if you turn the zooming ring after setting the focusing ring at 3 meters (10 ft), the focused range moves from the nearest distance to 3m. If the zooming ring is turned further, the macro-shooting mechanism is released and the focal distance is set at 3m.

When zooming is continued, the subject at a distance of 3m is zoomed up to. If the focusing ring is set at infinity, the focused range moves from macro range to infinity and after the macro-shooting mechanism is released at the focal distance of 7mm, you can change from macro-shooting to zooming. With this method, you can change scenes from the closest subject to others and zoom up on them, and it is effective in making clear the relative positions of the subjects or in changing scenes. This technique adds an outstanding effect to ordinary zooming.

**Depth of the field when the subject is at 189mm (7.44") from the film plane indicator**

| Diaphragm Aperture | Depth-of-Field mm(inch) |
|---|---|
| 1.4 | 188–190(7.40"–7.48") |
| 2 | 188–190(7.40"–7.48") |
| 2.8 | 188–191(7.40"–7.52") |
| 4 | 188–191(7.40"–7.52") |
| 5.6 | 186–192(7.33"–7.56") |
| 8 | 185–193(7.28"–7.59") |
| 11 | 184–195(7.25"–7.67") |
| 16 | 182–198(7.17"–7.80") |
| 22 | 180–201(7.03"–7.90") |
| 32 | 177–211(6.97"–8.31") |





# Electronic Flash Pictures

This camera has a built-in flash synchronization socket (X contact). When you take a title or animation film in single-frame shooting, an electronic flash unit can be used. When you use an electronic flash, the aperture must be controlled manually. The proper f/stop number is calculated dividing the GN (guide number) by the distance between the light and the subject. Set the proper f/stop according to the GN listed in the instruction book or on the calculation panel of the electronic flash. In this case, use the same unit for both the GN and shooting distance. For example, if the shooting distance is in feet, the GN should be in feet.

Do not mix meters and feet.

• Set the variable shutter control ring at "O". Otherwise, flash synchronized shooting cannot be performed. Shutter speed is approximately 1/43 sec. But actual exposure is the same as the flash period of the Speedlite.

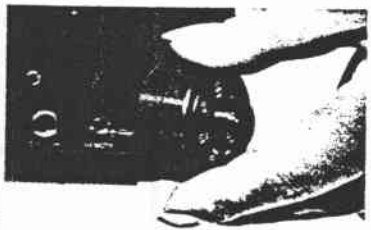
If using an electronic flash unit, be especially careful in fixing the exposure setting, because the still camera has a light requirement just for a single picture, whereas the 8mm cine camera requires the same light intensity from the flash unit for successive frames.

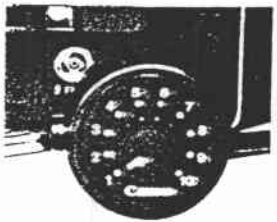
Better results are obtained when the Speedlite with its built-in electric circuit stabilizer is used. When using an electronic flasn unit without the stabilizer, keep in mind that the camera will function immediately after the pilot lamp lights up.

Open the aperture one f/stop or a half, or use the AC power source, according to the electronic flash you use.

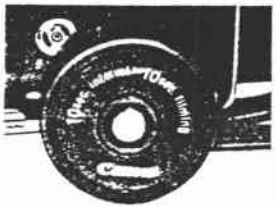
• A discharge tube of an electronic flash is said to bear about 5,000 operations, that is, about 1.5 cartridges of Super 8 film. Keep this in mind in single-frame shooting.

• A flash mounting adapter will be marketed soon.





Interval Timer E



# Time Control and Interval Shooting

Time control and interval shooting are useful when shooting continuous changes of the subject for a long time. For example, it can be used to keep a record of the growth of butterflies and cicadas or for analyzing an operation to standardize work. The Canon Auto Zoom 1014 Electronic has accessory timers for unmanned control. For this kind of photography, an running lock is employed and the timer is inserted into the remote control socket.

Three kinds of timers are available, the Interval Timer E, the Self-Timer E and the Time Lapse Programmer. (Time Lapse Programmer is available through special order.)

## Recording the stages of motion

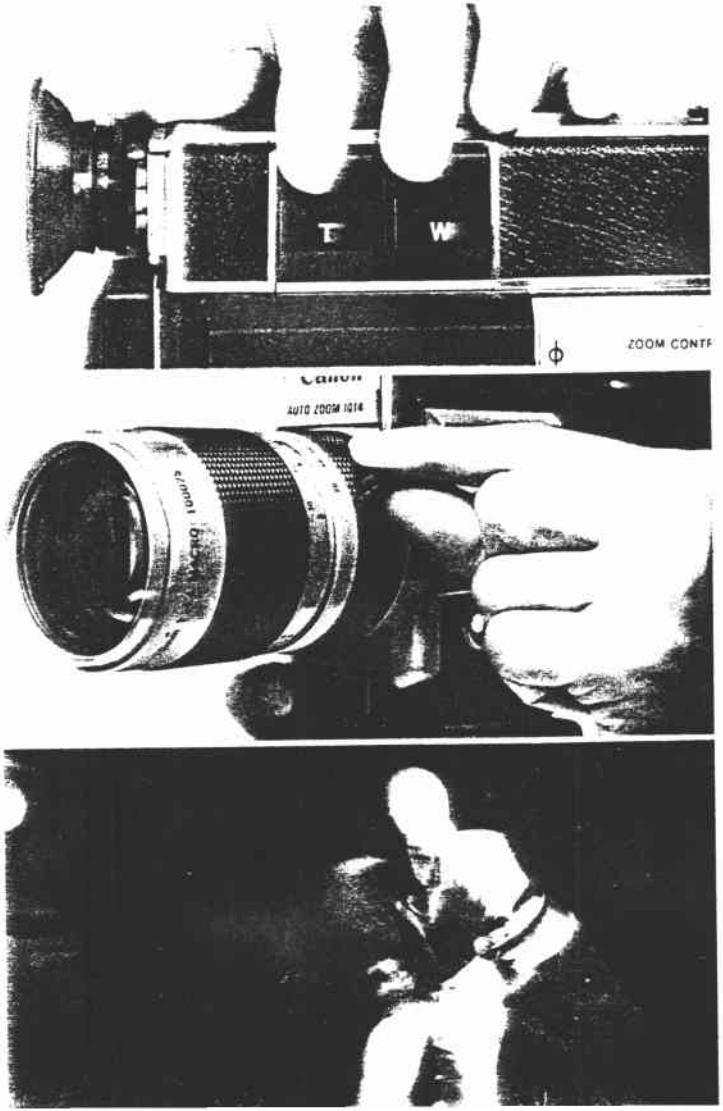
Taking pictures frame by frame at fixed intervals you can keep a record of the different stages of motion. The shooting time can be lengthened or shortened so that when the film is projected, the movement of the subject changes. This creates an unnatural effect as when shooting at lower speeds.

By using the Interval Timer E the time can be changed freely within one minute. For longer than one minute, use the Time lapse Programmer.

**• Self-Timer E**

Self-timer shooting can be performed with the timer attached to the remote control socket.

Shooting continues for ten seconds after 10-second interval.




# Shooting Techniques to Heighten Effects

## 1 Zooming

Zooming creates very interesting effects, but if used too often, it can become bothersome when the film is projected and can spoil the performance.

Same as with ordinary ultra-telephoto lenses, even the smallest blur of the longest focal point part of the lens will greatly mar the picture. When zooming, use a tripod and the Remote Control Switch 60 or Remote Control Switch 3 to prevent blur.

### WHAT TO CONFIRM FIRST

It is wise to zoom before pulling the trigger to confirm when it will create the best effect. Decide the composition of the scene before taking close-ups of the main subject so the audience will enjoy the zooming effect or switch scenes from close-up to long-shot to show the expanse it has.

### CHANGING THE SPEED OF ZOOMING

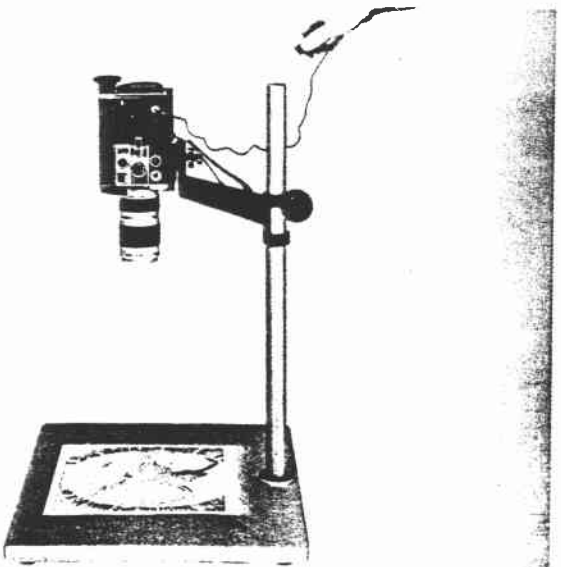
By using manual zooming, it is possible to lengthen or shorten the zooming time considerably. For example, it is possible to zoom without making the audience notice the change of the image magnification, if done slowly. Also when abrupt changes of zooming speed to maximum or minimum are necessary, or to maintain a certain magnification, any desired focal distance may be chosen with the manual zooming.

### ZOOMING TO OBTAIN A FOLLOW SHOT EFFECT

The follow shot effect is obtained by following a subject at a certain distance and it can also be expressed by zooming while keeping the camera fixed. For example, if a person walking toward the camera is zoomed in on slowly to maintain the same magnification, his size will not change, but it has the effect of changing the background.

### ZOOMING A LITTLE

The method of stopping the zooming at the required composition before reaching the maximum is also effective. After shooting for a while at the middle of the zooming range, zoom again to maximum telephoto in one take. This also gives variety to your work.



## 2 Panning

Panning is a method to shoot broad scenes or the whole interior of a room in one take. It is shot continuously by turning the camera from one side to the other from a fixed position. It is important to keep the camera still with a tripod and not to shake it or move it too quickly.

When panning with the camera held with your hands, stand with legs slightly apart and try to keep them and the hips as still as possible. Only the upper part of the body should turn. The movement tends to quicken, so it is better to use a higher fps.

Finish by taking a little more time on important scenes, keep the panning speed constant and avoid making it too broad. These are important facts for skillful panning.

It is also very interesting to combine panning with zooming.

## 3 Tilting

Panning consists in turning the camera from one side to the other. A similar movement upward or downward is called tilting. Shooting from above is called tilt-down and from below it is called tilt-up.

## 4 Title Shooting

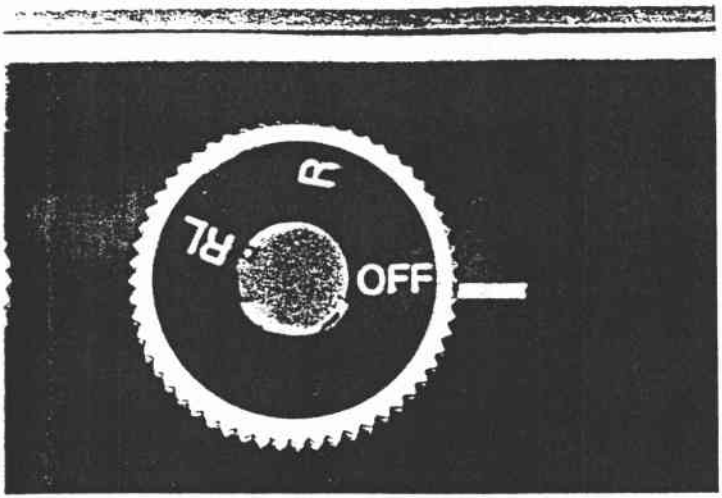
The Canon Auto Zoom 1014 Electronic easily enables you to shoot close-ups and do copy work with the macro mechanism. Use them for shooting titles. If animation shooting and single-frame shooting are used, you will be able to make professional-looking titles.

Do not limit yourself to splicing the developed films and projecting them. This will reduce the fun of watching your own story. Titles are necessary to clarify the object of the movie, and will help the audience to understand and enjoy the film.

There are several kinds of titles: the main title informs the content, the credit title states the maker, the scene title explains the contents, and the end title finishes the film. At least use the main title and the end title always. The credit title may be substituted by shooting the name of the maker or the initials of the producer together with the main title.

Study and use new ideas for more interesting titles.

It is convenient to use the Copy Stand 4 for title shooting. This serves also for close-ups, macrophotography and copy work.




# Note

When the camera is not used for an extended period of time, take the camera from the carrying cover and keep it in a place safe from dust and moisture. Do not store the camera near chemicals such as naphthaline. The batteries should be taken out of the battery compartment to prevent possible damage to the terminals from battery corrosion.

Blow off any dust on the lens with a blower brush or with a soft brush. If fingerprints are accidentally imprinted on the lens, wipe them off softly with a silicone cloth. Do not use heavy pressure, or the lens may be scratched.

If the camera is dropped in salt water, usually it is impossible to repair. In such a case, ask at a service station.

High temperature storage, such as inside the rear window or the trunk of automobiles, is very harmful to a camera.

| Type | Focal Length | Distance Scale | Distance from Film Plane to Subject | Picture Area |
|---|---|---|---|---|
| 58mm Close-Up Lens 450 | 7mm | ∞ | 643mm (2' 1-5/16") | 261 x 360mm (10-11/16" x 1' 2-13/16") |
| | | 1.5m (5') | 531mm (1' 8-13/16") | 188 x 259mm (7-7/16" x 10-1/2") |
| | 70mm | ∞ | 643mm (2' 1-5/16") | 27 x 38mm (1-1/16" x 1-1/2") |
| | | 1.5m (5') | 531mm (1' 8-13/16") | 20 x 27mm (13/16" x 1-1/16") |
| 58mm Close-Up Lens 240 | 7mm | ∞ | 424mm (1' 4-11/16") | 139 x 192mm (5-1/2" x 7-9/16") |
| | | 1.5m (5') | 390mm (1' 3-3/8") | 113 x 156mm (4-1/2" x 6-1/8") |
| | 70mm | ∞ | 424mm (1' 4-11/16") | 15 x 20mm (5/8" x 13/16") |
| | | 1.5m (5') | 390mm (1' 3-3/8") | 12 x 16mm (1/2" x 5/8") |

Close-up lenses may be used with the Auto Zoom 1014 Electronic, but when the Close-Up Lens 450 is used together with the filter, a shadow may appear in the corner areas of the image in the wide angle range.

# Accessories

## Close-Up Lens C-8 (Exclusive for 8mm movie)

## 58mm Close-Up Lens 450 C-8-2, 58mm Close-Up Lens 240 C-8

The Canon Auto Zoom 1014 Electronic has a single lens reflex type viewfinder without parallax. Even close-ups are shot exactly as they appear in the viewfinder.

The Close-Up Lens C-8, special for 8mm movies, completely corrects chromatic aberration. It needs only to be screwed into the tip of the lens to exercise its power in title shooting, copying documents and in shooting plants, flowers and insects.

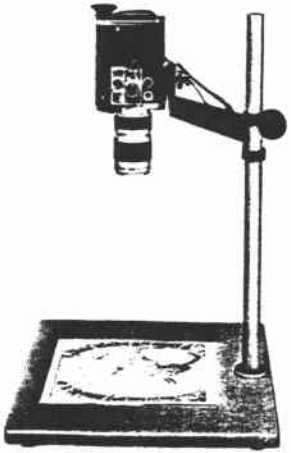
As the close-up may be shot from a remote position, it is particularly useful for shooting small animals in motion.

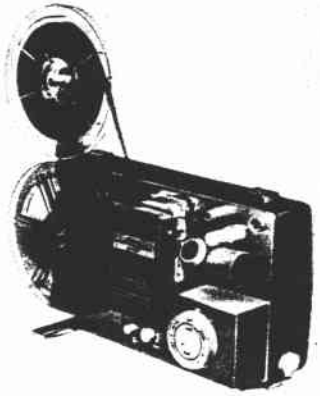
The distance is easily adjusted and, when shooting titles, you can choose any focal distance for good lighting.

* The 58mm in the name represents the diameter. The numbers 450 and 240 mean that when the distance scale of the lens is focused at infinity, the lens will focus the subjects at 450mm and 240mm respectively.

| Type | Filter Characteristics |
|---|---|
| ○● UV | Absorbs only ultra-violet rays. Especially effective at seaside and high mountains. Recommended for use with color film. |
| ○ Y1 Y3 | Increases contrast of monochrome film. Enhances clouds, darkening the blue sky. Brightens reds and yellows. |
| ○ O1 | Darkens blues, increases yellows and reds perceptibly. Good for contrasts, especially in distant landscapes. |
| ○ R1 | Makes strong contrasts. May also be used with infrared film. |
| ○ G1 | Prevents reds from turning radically into white. Lightens faces and sky appropriately, and reflects the lightness of fresh greenery. |
| ● ND4 ND8 | ND4 reduces light volume by 2 f/stops, ND8 by 3 f/stops, No effects on the reproduction of colors of color film. |
| ● SKY-LIGHT | Acts to harmonize blue skys and shade. |
| ● CCA 4 | For use with daylight type film under cloudy conditions. |
| ● CCA 8 | For use with tungsten type film under the morning sun or at sunset. |
| ● CCB 4 | For use with daylight type film under the morning sun or at sunset. |
| ● CCB | For use with daylight type film under tungsten light. (12 equiv.) |

○ For black and white film. ● For color film.





## Filters

The exposure of the Canon Auto Zoom 1014 Electronic is calculated by the TTL method which measures the incoming light through the lens and it is not necessary to adjust the exposure when filters are used. Use filters according to the purpose. The size should be 58mm and they are employed by screwing into the tip of the lens.

## Copy Stand 4

Used for titling, close-up shooting, copy work and single-frame shooting Consists of stanchion, carrying arm, metal fasteners and case.

## Cine Projector S-400

Completely automatic film loading and rewinding. The built-in slow-motion projection mechanism at 8 frames per second, and the 400 ft. reel make it more useful and enjoyable. Three kinds of films, the super 8, the single 8 and the regular 8, can be used.

# Technical Data

**Type:** 8mm movie camera with easy-loading system using Super 8 film cartridge.

**Picture Size:** 5.4 x 4.0mm.

**Lens:** f/1.4 with focal length of 7mm—70mm. Zooming ratio 10:1. 18 elements in 13 components including 9 rare glasses. With Super Spectra-Coating. Inner diameter, 58mm. Outer diameter, 60mm.

**Viewfinder:** Single-lens reflex type combined with split-image screen rangefinder. Meter information (diaphragm scale, meter needle, over/under-exposure warning marks, film end caution lamp, shutter angle indicator, and film transport indicator lamp). Eyepiece is adjustable (—4 to +2 diopter). Built-in eyepiece shutter and eyecup.

**EE Mechanism:** TTL type Servo EE Mechanism with CdS photocell controlling diaphragm, coupled to film speed and filming speed.

**Light Measuring Range:** From ASA 400, f/1.4, 18 fps. to ASA 16, f/32, slow-motion (54 fps) and single-frame shooting.

**Film Speed:** Automatically set by inserting the film cartridge.

| | |
|---|---|
| Artificial Light Type: | ASA 25, 40, 64, 100, 160, 250, 400 |
| Daylight Type: | ASA 16, 25, 40, 64, 100, 160, 250 |

**CCA Filter:** Color Conversion A (CCA) filter built-in for using artificial light type film in daylight. Cancelled by inserting CCA filter cancellation adapter or lighting unit to CCA filter cancellation adapter socket. Automatically removed by inserting the daylight type cartridge.

**Filming Speed:** 18 fps, 24 fps, single-frame and instant slow-motion (about 54 fps).

**Variable Shutter Control:** 0° to 150°, continuously. Closing entirely, this mechanism offers automatic fading.

**Lap Dissolve:** Perfect lap dissolve with the automatic rewinding and auto-fader mechanisms. Approximately 50 frames of lap dissolve is possible.

**Manual Aperture Control:** Possible with EE/manual aperture control ring.

**Power System:** Automatic filming and zooming by precise micromotors.

**Power Source:** Six 1.5 V penlight (Size AA) batteries, contained in body and handgrip. Powers filming system, zooming system and exposure meter.

**Power Zooming:** A selection of two speeds, H = 5 seconds, L = 7 seconds.

**Manual Zooming:** With zooming ring, zooming speed switch at M, and 120° rotation angle.

**Running Ability:** About 10 cartridges in normal temperature. Single-frame shooting with new batteries, 1.5 cartridges or more.

**Footage Counter:** Counts exposed footage. Automatically resets by removing the cartridge.

**Frame Counter:** 72 frames in one rotation (1 ft.) 2 frames per scale. With adjustable indication mark.

**Battery Check:** Check button and check window.

**Handgrip:** Folding type, containing battery chamber.

**Sockets:** For remote control, and for electronic flash synchronized to single-frame shooting.

**Remote Control:** Possible with Remote Control Switch 60 or 3.

**Switch Dial:** Safety switch, with running lock.

**Safety Devices:** Over/under-exposure warning marks, shutter lock, shutter angle indicator and film transport indicator to prevent mistakes when shooting.

**Macro-Shooting System:** Close-up shooting mechanism works by switching the zooming ring. When the distance scale is set at infinity, it is possible to get at 18.9cm (7-7/16") from the film plane indicator and 10mm (3/8") from the tip of the lens to the subject.

**Time Control and Interval Shooting:** By using the Interval Timer E, and the Time Lapse Programmer, intermittent shooting with intervals is possible.

**Self-Timer:** 10 seconds shooting after 10 seconds by attaching Self-Timer E.

**Accessories:** Rubber Hood S-60, Soft Case, 58mm Filter, 58mm Close-Up Lens 450 C-8-2, 240 C-8, Remote Control Switch 60, Remote Control Switch 3, Lens Cap, CCA Filter Cancellation Adapter, CCA Filter Cancellation Adapter Socket Cover, Cover for Remote Control Socket, Interval Timer E, Self-Timer E, *Time Lapse Programmer, Extension Cord E1000. (*This accessory is available upon special order.)

**Size:** 93.5 x 277 x 121mm (3-11/16" x 10-15/16" x 4-3/4").

**Weight:** 1,990 gr. (4 lbs. 6 ozs.) with batteries.

Subject to change without notice.